Piera Fehres
October 2011

A feeling and thinking approach of wildlife

Combining emotional and cognitive concepts in human dimensions of wildlife

Cover designed by Ilse Voskamp
Source pictures: flickr.com

A feeling and thinking approach of wildlife

Combining emotional and cognitive concepts in human dimensions of wildlife

Piera Nina Fehres
Student number: 870418 237 130

MSc Thesis Cultural Geography
Course code SAL-80436
Supervisor: Dr. Ir. M.H. Jacobs
Second supervisor: Dr. L. Wagner

Wageningen University
Department of Environmental Sciences
October 2011

Abstract

In previous studies of human dimensions of wildlife, cognitive concepts were the main focus for assessing the relationships between human-wildlife concepts. However, several scholars have indicated that emotions could contribute into getting a more comprehensive understanding. In this thesis, relationships between emotional and cognitive concepts are assessed. The concepts with emotional aspects were personality traits and emotional dispositions towards the wolf and deer. The two wildlife value orientations (domination and mutualism) and attitudes and norms (as variable 'acceptability of lethal control on the wolf or deer') served as the cognitive concepts. These four concepts all differ in their amount of specificity. Data was obtained from a questionnaire (n = 369) among students. Linear regressions models indicated that wildlife value orientations and emotional dispositions have predictive power for the acceptability of lethal control (R^2 max 0.37 and R^2 max 0.17, $p < 0.001$). People with a dominant value orientation find lethal control on both species of wildlife more acceptable, for mutualism this is the opposite. Positive emotions towards both species lowers the acceptability of lethal control, which is the opposite for most negative emotions. The added value of emotional dispositions to wildlife value orientations is maximum 11% ($p < 0.001$) in explaining the acceptability of lethal control. This finding underlines what was suggested by the literature, emotional concepts have added value in the domain of human dimensions of wildlife.

Keywords: human dimensions of wildlife, cognition, emotion, personality traits, wildlife value orientations, emotional dispositions, attitudes, norms

Preface

Animals have always been a big part of my life, from having countless pets to horse riding. After the decision in high school of not becoming a vet, I thought I would leave animals as just a hobby and not my profession. With the choice for the BSc 'Forest and Nature Conservation', suddenly there was the opportunity to combine my study and my interest in animals again.
During my time in Wageningen, this interest shifted from just animals, to the relationship between humans and animals. Due to my growing curiosity towards sociology and psychology and their relationship to nature conservation, I chose to do the MSc of 'Socio-spatial Analysis' (now 'Cultural Geography'). I wanted to learn more about peoples motives and drives but also about the influence of emotions and their relationship to the environment. For example, my own fear of spiders always fascinated me. Being a 'nuchtere Hollander' (steady Dutchmen), this fear seemed completely irrational, especially because there're no dangerous spiders in the Netherlands. Still, I have almost no control over this fear. During a lecture of the course Environmental Psychology, the reasons behind this fear were explained and my interest was caught immediately. When the opportunity presented itself to do my thesis on emotions towards wildlife, I knew straightaway that that was what I wanted to do.
While working on this thesis, I had my ups and downs, however, when I look back, I think that writing this thesis was the most challenging but also the most interesting and satisfying project of my study. Off course, I couldn't have done it alone. Therefore, I first and foremost want to thank my supervisor Maarten Jacobs, who with his (for me it seemed) almost endless knowledge on the subject, critical feedback and guidance gave me the inspiration to write this thesis. Without his help, I wouldn't have gotten this far. Furthermore, I want to thank Jerry Vaske, for helping me with designing the questionnaire, without his extensive knowledge on quantitative research this thesis would've looked very different.
Besides my two supervisors, there're a lot of other people who supported me. Meike, thank you for making the effort of reading my entire thesis and for all the useful tips. Ann Magdalen and Ilse, thank you for taking the time and helping me with the questionnaires and the cover. To everybody who was out of the country, the endless on and off topic Skype conversations motivated me to keep me going. And off course, I also want to thank Jael for her support and loving attention. Last but not least, I want to thank my parents, who made me the person I am today and enabled me to write such a thesis.

Now, after a little bit more than six years of studying, I hereby present my thesis. I hope you enjoy reading it!

Piera Fehres
October, 2011

Table of contents

	Page
1. Introduction	10
1.1 Humans and wildlife	10
1.2 Structure of the thesis	11
2. Literature review	12
2.1 Introduction	12
2.2 The cognitive hierarchy	12
2.3 Emotions	13
2.3.1 Defining emotions	13
2.3.2 Operationally of emotions	15
2.3.3 Perspectives on emotions	16
2.3.4 Emotions and wildlife	17
2.4 The mental hierarchy	17
2.5 Personality traits	18
2.6 Theoretical framework	19
2.7 Research questions	21
3. Methods	22
3.1 Introduction	22
3.2 Personality traits	22
3.3 Emotion and emotional dispositions	24
3.3.1 Dimensional emotion measurement instruments	24
3.3.2 Discrete emotional measurement instruments	25
3.3.3 Selected measurement instrument	26
3.4 Wildlife value orientations	27
3.5 Acceptability of management strategies for wildlife	28
3.6 Data collection	29
3.7 Data analysis	30
3.8 Limitations	31
4. Results	33
4.1 Introduction	33
4.2 Scale analysis	33
4.3 Descriptive results and gender differences	38
4.4 Linear regression models	42
4.4.1 Personality traits and wildlife value orientations	42
4.4.2 Personality traits and emotional dispositions	43
4.4.3 Wildlife value orientations and the acceptability of lethal control	43
4.4.4 Emotional dispositions and the acceptability of lethal control	44
4.4.5 Wildlife value orientations, emotional dispositions and the acceptability of lethal control	45
4.5 Conceptual framework	46
5. Discussion	48
5.1 Introduction	48
5.2 Combining cognitive and emotional related concepts	48

5.3 Reflection on methods 50

6. Conclusion 52
6.1 Introduction 52
6.2 Personality traits and wildlife value orientations 52
6.3 Personality traits and emotional dispositions 52
6.4 Wildlife value orientations and the acceptability of lethal control 53
6.5 Emotional dispositions and the acceptability of lethal control 53
6.6 The combined value of wildlife value orientations and emotional dispositions 54
6.7 Conceptual framework 54
6.8 Recommendations 55

Literature 57

Appendix 60
1. Questionnaire “Your view on wildlife” 60

Overview of tables and figures

Tables **Page**

1. The five personality traits and their associated definitions (Matthews, Deary, & Whiteman, 2009) 19
2. Items of personality traits 23
3. The dimensional emotional disposition measurement 27
4. The discrete emotional disposition measurement 27
5. Items of wildlife value orientations 28
6. The five possible management actions 28
7. The three situations per wildlife species used in the questionnaire 29
8. An example of how the acceptability of management strategies is measured in the questionnaire 29
9. Reliability analysis for personality traits 33
10. Reliability analysis for wildlife value orientations 35
11. Reliability analysis for the acceptability of lethal control 36
12. Reliability analysis of discrete emotions towards the wolf and deer 37
13. Reliability analysis for the dimensional emotional disposition measurement for the wolf 37
14. Reliability analysis for the dimensional emotional disposition measurement for Deer 38
15. Descriptive results and gender differences for personality traits 39
16. Descriptive results and gender differences for wildlife value orientations 39
17. Descriptive results for the discrete measurement of emotional dispositions 40
18. Gender differences for the discrete measurement of emotions dispositions towards the wolf 40
19. Gender differences for the discrete measurement of emotions dispositions towards deer 41
20. Descriptive results for the dimensional measurement of emotional dispositions 41
21. Gender differences for the dimensional measurement of emotions dispositions 41
22. Descriptive results for the acceptability of management strategies 41
23. Gender differences for the acceptability of lethal control 42
24. The relationship between personality traits and wildlife value orientations (two dimensions) 42
25. The relationship between personality traits and wildlife value orientations (four dimensions) 43
26. The relationship between personality traits and emotional dispositions 43
27. The relationship between wildlife value orientations (two dimensions) and the acceptability of lethal control 44
28. The relationship between wildlife value orientations (four dimensions) and the acceptability of lethal control 44
29. The relationship between emotional dispositions and the acceptability of lethal Control 45
30. Linear regression models predicting the acceptability of lethal control on wolves 46
31. Linear regression models predicting the acceptability of lethal control on deer 46

Figures

1. The Cognitive Hierarchy Framework (Adapted from Manfredo, 2008) 12
2. Core affect (Barrett & Russel, 1999) combined with the discrete emotions perspective 16
3. The mental hierarchy 17
4. The model of the conceptual framework 20
5. The correlations of the conceptual framework 47
6. The relationships of the conceptual framework 55

CHAPTER 1
Introduction

On the 2nd of September 2011 the first wolf was spotted in the Netherlands. Since the last wolf was killed in 1897 this predator has been absent in Dutch nature. Only one day later, this news article already attracted over a hundred comments ranging from "I'm happy this gorgeous animal is back in the Netherlands" to "Is it not possible to shoot this scary animal, because it's a danger to children and livestock" (Nu.nl, 2011). These comments show the diversity of reactions as well as the different emotions that the wolf evokes.

1.1 Humans and wildlife

From wildlife to pets, there are numerous ways to come in contact with animals. Worldwide, 600 million people visit zoos and aquariums each year (Vining, 2003). Wildlife related tourism is an expanding business as tourists from all over the world travel to nature areas to observe wildlife (Manfredo, 2008). Wildlife documentaries and other television shows about animals are extremely popular (Jacobs, 2009), which led to a network broadcasting only animal related items; Animal Planet. All these behaviours suggest that many humans have some special bond with animals.

Vining (2003) comes up with five mechanisms that have been proposed by several scholars to explain the nature of human-animal bonds:

- Animals offer comfort, companionship, and social support
- Animals are social facilitators
- Animals reinforce self-worth, usually through what is perceived as the unconditional love of the animal
- Animals help humans to develop a sense of self and self-esteem
- Humans are social creatures and animals appeal to our propensity to interact socially.

Besides these five mechanisms, research has also shown that there's evidence that people who keep pets have several health benefits (Brodie & Biley 1999, cited in Jacobs, 2009). These examples all show the positive experiences with animals, but on the other hand, negative associations with animals are also commonly shared. The fear of other living organisms and/or nature seems to be common among humans across all cultures (Ulrich, 1993), fear of spiders and snakes fall in this category. Wildlife was always present in early hominid life, either as prey or as threats to survival and it could be that humans have inherited responses to animals and wildlife in specific (Manfredo, 2008). Furthermore, humans not only share a special bond with animals, they also tend to react emotionally to situations when animals are involved.

Jacobs (2007) describes different mechanisms that can explain whether people like or dislike animals. (1) People have an innate sensitivity for biological movement (visual perception). The Heraclitean motion (movement that is always changing but stays the same) of aquarium fish swimming or herbivores grazing suggest security, while the erratic motion (deviating movement) of injured animals, birds taking flight or animals breaking into a run suggest danger, which offers insight in this inherited response (Manfredo, 2008). (2) People have innate predispositions/quick learning programs to respond emotionally to some animals. The fear of, for example, spiders, is not innate, but emerges immediately when people see that someone else reacts with fear towards a spider. This can be seen as an innate predisposition or quick learning program to acquire a certain response (fear, in this case). (3) People have mental dispositions to respond emotionally to animals that result from conditioning. The mechanism of conditioning gives a previously neutral stimulus an emotional load. This can cause the liking or disliking of an animal (e.g., resulting from a particular frightening experience). (4) People react emotionally to the emotional expressions of animals. Research of Russell (2003) showed that

humans are reasonably accurate in recognizing the emotions of horses. The recognition of animal emotional expressions can partially explain why humans can have compassion for animals and bond with them. Evolution has assigned people with the mechanism to react with same emotion to other species that show this emotion, because this benefits survival. Due to this, we feel fear when we encounter a fearful expression and we feel sadness when we encounter sad expressions. This mechanism causes that animals can make people feel good. Grazing herbivores again, suggest that the environment is safe and can make people feel good, because their bodily expressions emit that they are in a positive state (Jacobs, 2009).
Most of the previously mentioned mechanisms proposed by Vining (2003) and Jacobs (2009) have emotional foundations. Already, one can conclude that animals evoke strong emotional reactions in humans, positive as well as negative (Jacobs, 2009) and that emotions are an important basic human response to animals.
Despite the expanding business of wildlife tourism and the positive feelings people can experience when in contact with wildlife, some encounters with wildlife are undesirable. Bear attacks and snake bites, but also deer collusions and nuisance from wild boars are only a few of the many existing examples of negative interactions between humans and wildlife. These events can lead to conflicts between humans and wildlife. Due to increasing human population growth (Bright, Manfredo, & Fulton) and more humans living closer or in the habitat of wildlife these conflicts can become more common in the future. Besides that, the conflicts between humans and wildlife don't have to be direct, several issues with wildlife take place in politics or in the public debate. Conflicts about wildlife are often filled with different emotions people have when they think about animals and wildlife in specific. A better understanding of the human-wildlife relationship might help preventing and solving these conflicts.

Previous research in human dimensions of wildlife is mainly based on cognition, which focuses on how people perceive, remember, understand and think about wildlife. For instance, attitude studies are the most prevalent type of investigation in human dimensions of wildlife (Manfredo, 2008). While human behaviour is at least partly explained by cognition, there's still a fundamental part that isn't explained yet. Barrett, Mesquita, Ochsner, & Gross (2007) state that human emotions play a crucial role in the motivation and the development of values and norms of people. Values and norms are cognitive concepts and this statement thus indicates cooperation between cognition and emotion. The objective of this thesis will therefore be: *"improving the general understanding of human-wildlife relationships by researching emotional concepts and combine these with the existing cognitive theories and concepts".*
In the field of human dimensions of wildlife, there's not a lot of systematic empirical research done on emotions, therefore this research could contribute to a better understanding of human-wildlife relationships. With a more comprehensive view of the human-wildlife relationships, existing and future human-wildlife conflicts may be prevented and/or solved.

1.2 Structure of the thesis

In this paragraph the structure of this thesis will be explained. To get more insight into the existing theories and concepts which are going to be used in this thesis, chapter two will give a literature review. At the end of this chapter, the research questions will be stated. In chapter three the methods used in this thesis will be described. Chapter four will focus on the results of this thesis. In chapter five, the obtained results will be discussed and compared to other studies. Consequently, chapter six is the conclusion of this thesis, where the research questions will be answered and recommendations for further research will be given.

CHAPTER 2
Literature review

2.1 Introduction

In this chapter an overview of the literature used for this thesis will be given. As mentioned in the introduction, the goal of this thesis is to combine emotion and cognitive related concepts of human dimensions of wildlife. The focus of this thesis will be on the emotional aspects of the human-wildlife relationships, however, previous research mainly focussed on assessing the cognitive aspects of these relationships. Therefore, in this literature review several cognitive and emotion concepts are explored. The specific concepts which are going to be empirically assessed will be described in paragraph 2.6, where the theoretical framework of this thesis will be presented. The last paragraph will outline the research questions of this thesis.

2.2 The cognitive hierarchy

As mentioned in the introduction of this chapter, prior research mainly focussed on cognitive concepts. The cognitive hierarchy is a theoretical framework of a theory driven approach for understanding human relationships with wildlife. This framework is frequently used in the research field of human dimensions of wildlife. The cognitive hierarchy is developed by Fulton, Manfredo, & Lipscomb (1996); Manfredo (2008); Teel & Manfredo (2010) and was designed to study human thought and behaviour towards wildlife and is based upon social psychological research. The cognitive hierarchy "explores the relationships between general values/value orientations and specific attitudes/norms to understand how these cognitions influence individual and/or agency behaviour" (Vaske, Jacobs, & Sijtsma, 2011). The model, as seen in figure one, reflects an hierarchical organization and starts with values, which are the most abstract cognitions. Behavioural intentions, on the other hand, are the most specific cognitions and are closest to the actual behaviour. The cognitive hierarchy gives insight in how cognitions are structured and is therefore an indispensable framework when one is assessing cognitions.

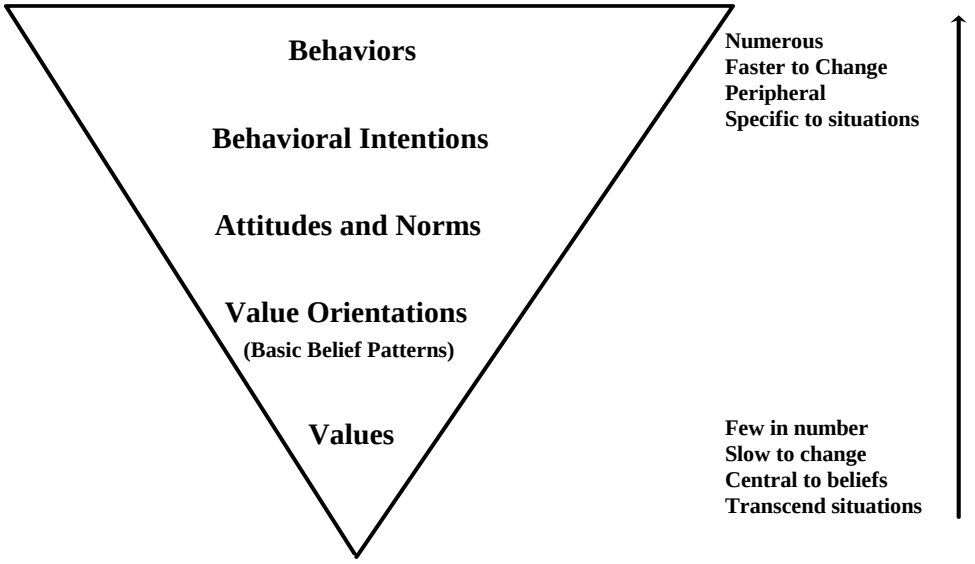

Figure 1. The Cognitive Hierarchy Framework (Adapted from Manfredo, 2008).

Every concept in the cognitive hierarchy differs in specificity. Values are the least specific concepts, they are often formed in early life, are difficult to change or not changeable at all and don't explain much of the variance in specific behaviour. When moving up on the mental hierarchy, the concepts start to be more specific to situations; value orientations relate more

directly to a context than general values. Value orientations are basic belief patterns and they are reflected in the schematic networks of beliefs that organize around values and that give contextual meaning to these values (Manfredo, Teel, & Henry, 2009). When used in the domain of wildlife, wildlife value orientations apply. These value orientations are ideologically shaped beliefs that orient and provide personal meaning to one's more basic values in relation to wildlife (Teel & Manfredo, 2010). Within wildlife value orientations there are two key value orientations that affect relationships with wildlife: domination and mutualism (Manfredo, 2008). A study by Manfredo, et al. (2009) done in nineteen western United States indicated that the public varies considerably in mutualism and domination wildlife value orientations. Mutualists (high on mutualism, low on domination) feel that animals have rights and are more or less equal to humans, they strive for coexistence between humans and animals. People with a predominantly domination value orientation (high on domination, low on mutualism) have a view of human mastery over wildlife and therefore feel that wildlife management should be beneficial for humans. For example: mutualists seemed to be considerably less accepting than people with a domination orientation when it comes to management techniques that involve harm to wildlife (Manfredo, 2008). Different wildlife value orientations influence the way people perceive wildlife, the value orientation concept has been applied in several countries and the orientations can be recognized across different cultures (Jacobs, 2007; Raadik & Cottrell, 2007; Zinn & Shen, 2007). Wildlife value orientations explain the acceptance of management actions up to fifty per cent and are thus strongly predictive of attitudes towards fish and wildlife issue (Manfredo, 2008). This makes wildlife value orientations a useful concept for explaining behaviour, but also for assessing the relationships between several concepts.

Attitudes and norms are more specific concepts than wildlife value orientations. This expresses itself in the fact that attitudes and norms are more specific to situations because they define to what degree a person likes or dislikes a certain situations or object. Attitude is defined as "an association, in memory, of an evaluation with an object" (Fazio et al., 1982 cited in Manfredo, 2008). Norms, on the other hand, are "people's perception of what others want them to do" (Manfredo, 2008). An example of an attitude is having positive evaluation towards cats, because you like them. This would mean that you have a positive attitude towards cats. An example of norms is not littering in a nature area, because you find it unacceptable. Attitude and norms combined explain therefore a person's view towards a certain situation or object.

In the cognitive hierarchy, actual behaviour is closest related to behavioural intentions, which is the most specific concept. The behavioural intention is "a person's belief about how he or she will behave in a specific situation" (Manfredo, 2008) and is therefore assumed to predict behaviour.

2.3 Emotions

In this paragraph emotion itself and emotion related concepts are discussed to get a better grip on emotion and on how emotions work.

2.3.1 Defining emotions

Numerous researchers have tried to define emotions, but no consensus is reached yet. To get a view on the diversity of definitions of emotion, a few of these definitions will be discussed in this paragraph. Researchers try to define emotion to get a better understanding of the concept. Some state that emotion is an actual state of consciousness, people are aware that they are experiencing a certain emotion. They are intense yet brief, an emotional episode may last seconds or minutes at the most (Gray & Watson, 2007). Others like Frijda (2005) define emotion as "the inner determinant of non-instrumental behaviour and non-instrumental aspects of behaviour". This characterizing of emotion does not describe the content of emotions and stays

very vague. Yet another definition is “experiences of emotion are content-rich events that emerge at the level of psychological description, but are instantiated by neurobiological processes” (Barrett, et al., 2007). This definition tries to give a complete description of emotion but stays very vague, using words like ‘content-rich’, which may sound absolute but in fact doesn’t say anything. Damasio (2003) tries to divide the concept of emotion into several other concepts, where he makes the division between emotion and feelings. He states that emotion is the part of the process which is made public and feeling is the part that remains private; emotions play their part in the body, where feelings play their part in the mind. This distinction makes emotion nothing more than a physiological process that initiates a response in the human body. Besides that, he clarifies the difference between emotion and mood. Mood, he states, is the sustaining of a given emotion over long periods of time but it can also be applied to the frequently repeated engagement of the same emotion, characterizing a person. None of the just discussed definitions seems to completely get a grip on what emotion really is and all the definitions focus on other aspects of emotions. Nonetheless, from this small review of definitions one can already conclude that there’s empirical evidence that there’s no consensual definition of emotion yet. Therefore some scientists came up with the solution “emotions are what people say they are” (Scherer, 2005). However, besides admitting that there’s no consensus reached in defining emotions, there are things about emotions that are clear. Emotions are a basic concept, not reducible to another category and most lay people will understand you when you’re talking about emotions. Consequently, even though researchers have a hard time defining emotions, among lay people there seems to be no confusion. This is why the word ‘emotion’ will be used in this thesis instead of the by Damasio (2003) proposed ‘feelings’, with emotion most people will understand what is meant. To conclude, even though there’s no consensus on a how to precisely define emotion, there’s such a thing as a ‘common-sense’ definition.

Many researchers have proposed typologies of emotions, and as with the definition of emotions, no consensus is reached on the exact typology of emotions. However, researchers do agree that emotions should be divided into those who are primary (basic) and those that are secondary (Manfredo, 2008). There’s no consistent opinion on the precise number of basic emotions and the specific terms. Ekman, Friesen and Ellsworth (1972) state that anger, disgust, fear, joy, sadness and surprise are the basic emotions. Damasio (2003) agrees on this statement. However, Frijda (1994) argues that desire, happiness, interest, surprise, wonder and sorrow are the basic emotions. A third view on basic emotions comes from Watson (2001) who defines them as fear, love and rage. It’s again clear that a consensus about the content and number of basic emotions have not been reached yet, though some emotions like surprise and fear are mentioned more often than other emotions.

Basic emotions are not only expressed by humans but are also found with several animal species like chimpanzees, wolves and dolphins. Some basic emotions, like joy or sadness are innate and deploy themselves right after birth. For fear this seems to be different, research on chimpanzees showed that the monkey’s innate fear of snakes required an exposure not to a snake but to another monkeys expression of fear of the snake. This one exposure is enough to start the behaviour but without this one exposure the innate behaviour isn’t working (Damasio, 2003). Besides the basic emotions, there are also social emotions. Social emotions include emotions like sympathy, embarrassment, shame, guilt, pride, jealousy, envy, gratitude, admiration, indignation and contempt (Evans, 2001). Even these social emotions are found in animal species and off course in humans, but these emotions are sometimes carried out different in different cultures. Hence, the existence of basic as well as social emotions is obvious, even though researchers haven’t come to an agreement about the exact typology.

2.3.2 Operationality of emotions

To get a better understanding on how emotions work this section describes several emotion related concepts.

Debate is still going on between scholars whether emotion is experienced as conscious (Frijda, 2005; Ortony, Clore, & Collins, 1990) or as an unconscious state (Damasio, 2003). When emotions are seen as unconscious, they're followed by an innate response constituted by subcortical brain regions and feelings give the emotion a conscious meaning. Damasio (2003) found proof for this statement in the finding that patients suffering from brain damage, lost the ability to express a certain emotion, which caused them to also lose the ability to experience the corresponding feeling. This was not the case the other way around, when patients lost the ability to experience certain feelings they could still express the corresponding emotions. The findings of Damasio (2003) indicate that emotion probably is experienced as an unconscious state, but as mentioned before, Damasio (2003) makes a division between emotion and feelings. Frijda (2005) doesn't make this division, which could explain the difference in views of the consciousness of emotions.

To get more insight in the operationality of emotions, it is useful to make a distinction between emotional bodily reactions, emotional stimuli and emotional experiences.

Emotional bodily reactions are evolutionary determined emotional responses and built-in. This has a benefit for survival because the response mechanism is very fast, which increases the chances of survival for early humans when they were, for example, confronted with a predator, then this would save precious seconds. Emotional bodily reactions are also 'beyond any control', humans are not able to suppress these emotions or even steer them. For example, humans are unable to control increased heart rate and the particular facial expressions that belongs to a certain basic emotion cannot be suppressed, the expression will be visible, even if it's for only a split second. There's a difference between expressive reactions (e.g., smiling) and physiological reactions (e.g., increased heartbeat). These two kinds of bodily reactions are similar across cultures. Ultimately, the result of the emotional response is to secure the survival of the organism (Jacobs, 2006). That emotional bodily reactions are similar across cultures, doesn't rule out cultural and individual differences in emotional behaviour. This behaviour lasts longer than the first few seconds of the emotional bodily response of basic emotions and isn't determined by evolution (Jacobs, 2006). Mood is seen as one step further from emotional behaviour. This slow-moving feeling-state is often weakly tied to a specific object or situation, in contrast to emotions, because they're quick-moving reactions that occur when an organism encounters an stimuli (Rottenberg, 2005).

Emotional stimuli induce emotional reactions, evolution has programmed humans to respond to stimuli that have particular properties. Besides that, humans are able to develop certain responses to other stimuli with bodily reactions (Jacobs, 2006). Before responding to emotional stimuli, there should be some mechanism that detects the emotional significance of the stimuli. This evaluation of significance is named emotional appraisal. The mechanism of appraisal is formed by evolution and can therefore detect the emotional significance of stimuli without cognition of the stimuli (Jacobs, 2006). Appraisal gives meaning to the stimulus and from there the matching reaction is chosen. It therefore plays a big role in the elicitation and differentiation of emotions. The process of appraisal is the link between the organism and the situation that causes the emotion (Ekman, 1972). Appraisal differs from cognition because cognition is mostly seen as based upon conscious reasoning and post-perceptual where appraisal is more on a simply sensory level (Leventhal & Scherer, 1987).

Jacobs (2007) states that emotional experiences are "the contents of consciousness during and immediately after an emotional reaction". He assumes that emotional experiences therefore include, but are not limited to, feelings. Izard (2007) describes emotional experience as the

interpretation of the situation and the bodily reactions, stating that feelings give meaning to the emotion.

2.3.3 Perspectives on emotions

Within the realm of psychological research, there are two perspectives on how different emotions are related to each other. According to the dimensional perspective, there's one fundamental dimension that organizes emotions; core-affect. In contrary to this perspective, the discrete perspective assumes that there are several quantitative emotions, all significantly different from each other.

Within the dimensional perspective, core-affect assumes that every experience has a position on the pleasure-displeasure (valence) dimension (Jacobs, 2006). Core-affect used to refer to the general class of feeling states based on positive and negative feelings. Other research state that core-affect is two dimensional and that there is a second dimension of arousal (Jacobs, 2006; Russell & Barrett, 1999) where pleasantness (valence) and activation (arousal) capture the core affective feelings in mood and emotion (Barrett & Russell, 1999). The constructs of emotion and mood are assumed to share similarities because they both refer to feeling states that can be characterized as positive or negative (Gray & Watson, 2007) and this can be researched under the name of affect. Core affect is primitive, universal and simple as it is based upon raw feelings evident in moods and emotions. The experience of affect is seen as consciously, it's a mental process but not cognitive or reflective (Russel & Barrett, 1999). The mental states of core-affect involve evaluative feelings where a person likes or dislikes what's happening (Gray & Watson, 2007). The two-dimensional structure can be measured on a continuous scale. There's, though, disagreement within the dimensional perspective on how different dimensions relate to each other. Where some theorists state that positive and negative emotions are inversely related and others assume that positive and negative emotions are relatively independent (Gray & Watson, 2007).

The discrete perspective assumes that every emotion (e.g., anger, sadness) corresponds to a unique profile in experience, physiology and behaviour (Mauss & Robinson, 2009). This approach goes back to the origin of language where every word describes a particular state. Justification for accepting this perspective is that the structure provided by language (language-based categories) seem to correspond with unique response patterns.

It's possible though, to combine the dimensional and discrete perspective; assuming that each discrete emotion represents a combination of several dimensions (see figure two). Anger, for example, could then be characterized as negative valence and high arousal.

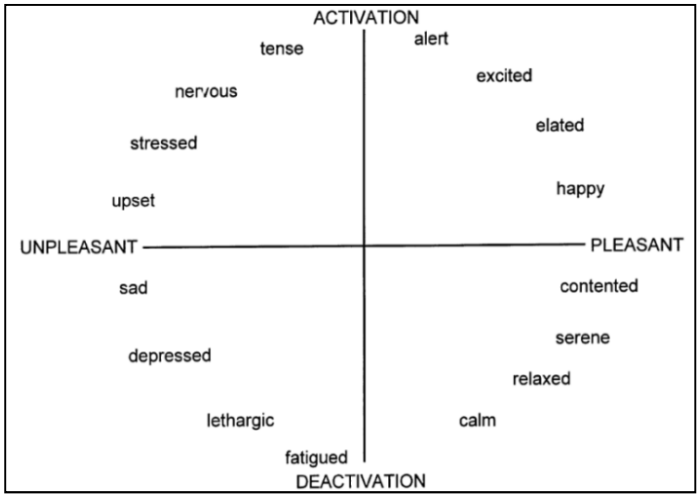

Figure 2. Core affect (Barrett & Russel, 1999) combined with the discrete emotions perspective

2.3.4 Emotions and wildlife

In the context of wildlife, emotions probably explain a big part of why people are attracted towards animals or wildlife in specific. People with a certain emotional disposition towards wildlife, such fear of snakes, detect wildlife in a natural scene faster than people without this disposition (Ohman, Flykt, & Esteves, 2001). Emotions towards wildlife haven't been studied systematically yet, most studies focused on fear towards animals (Ohman, et al., 2001), which still leaves a great number of emotions unstudied. And although the emotions people experience when they come in contact with animals vary greatly in quality and strength, Manfredo (2008) states that they are the ultimate internal cause for being attracted to wildlife. Therefore it seems plausible to study the emotions people experience when coming in contact with wildlife.

2.4 The mental hierarchy

As one can conclude from the previous paragraphs, within the realm of psychological research, much has been done to explain people's behaviour and experiences (Barrett, 2004; Bright, et al., 2000; Izard, Libero, Putnam, & Haynes, 1993; Jacobs, 2007). Where some researchers focus on cognition, such as values, to explain behaviour or experience (Bright, et al., 2000; Fulton, et al., 1996; Jacobs, 2007), other focus on emotions (Barrett, et al., 2007; Jacobs, 2009; Russell & Barrett, 1999). The mental hierarchy, a model provided by Jacbos & Vaske (2010) could provide more clarity in how several concepts might explain human behaviour and experience, and explain the relation between emotion and cognition. This model (figure three) is based upon the assumption that cognition and emotion explain human behaviour. Though cognition and the emotional system are two distinctive systems in the brain, for human behaviour it's most likely that they interact. Therefore, the model tries to integrate emotion and cognition, with the help of the cognitive hierarchy. The left column is based upon cognition, with the concepts directly derived from the cognitive hierarchy. The right side of the model is based on emotion, both columns influence behaviour in specific situations. The model is an hierarchical organization and starts with the least specific concepts; values and personality traits. From there on, the model moves up to more specific influencers of behaviour. Values and personality traits have thus in common that they're slow to change or not changeable at all, people only have a few of them and they transcend situations. When moving up on the mental hierarchy, the concepts start to be more specific to situations, are more numerous in people and are faster to change.

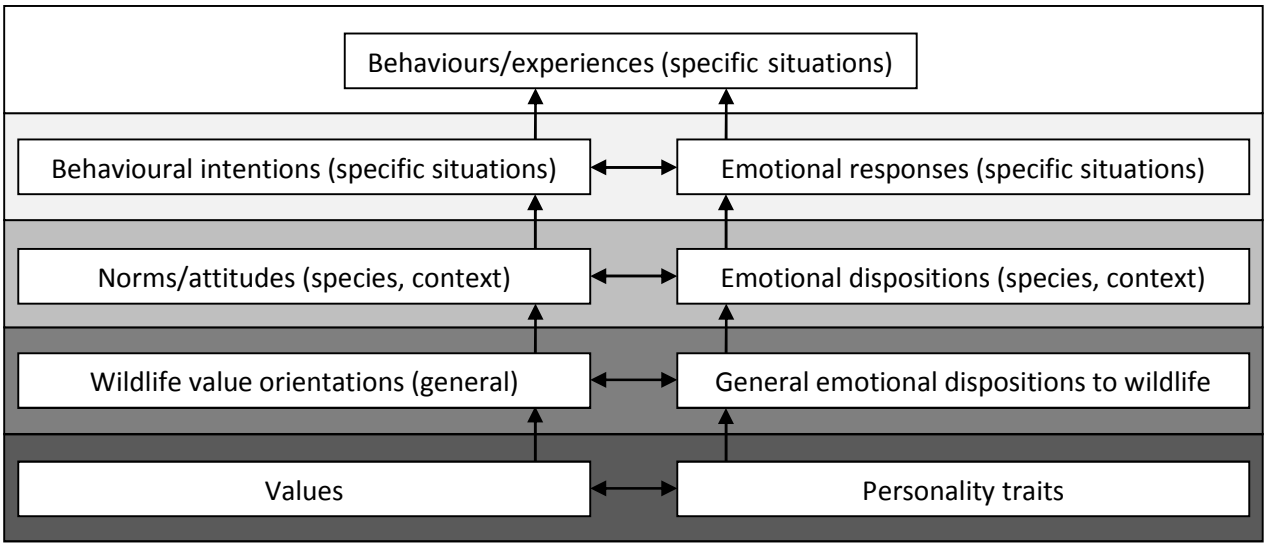

Figure 3. The mental hierarchy ⟷

Human behaviour is almost impossible to describe without using emotion related terms like fear, anger and happiness. On the emotion side of the mental hierarchy, there is the distinction between traits and states. Traits determine who you are, where state (emotion/feeling) determines how you are. Traits are therefore peoples permanent qualities, like 'lazy, nice, friendly, mean' (Stein & Hernandez, 2007) and state can be typified by words like 'feeling sad or happy'. Personality traits, general emotional dispositions to wildlife and emotional dispositions (species, context) are all traits, they define who a person is. It's most likely that personality traits, which are the foundation of states, influence general emotional dispositions to wildlife. General dispositions influence the more specific dispositions focused on specific species of wildlife or a specific context where wildlife plays a role. An emotional disposition is the tendency to react consequent with the same emotional response when in contact with a certain object. These dispositions are formed in life and they manifest themselves in the form of actual emotion when in certain appropriate situations. In this way they differ from feelings because feelings are seen as a state of consciousness and the emotional disposition stays when feeling itself isn't felt (Stout, 1924). The difference between emotion/emotional response and emotional disposition is best to be described as the difference between state versus traits. An emotional disposition is a trait because it determines who you are. An emotional response is a state, it defines how a person is in a specific situation. This response is possibly influenced by emotional dispositions and the emotional response predicts how people behave or experience a specific situation.
The mental hierarchy can be a useful framework to assess relationships between cognitive and emotional concepts and might be able to predict and/or explain behaviour.

2.5 Personality traits

Within psychological research, the concept of personality traits frequently assessed. Two keys assumptions are made in personality trait research. First, traits are stable over time, which means that although an individual's behaviour varies from time to time, there's a core of consistency in every human. This said, one can assume that there are differences between individuals that are apparent across a variety of situations. Second, it is generally assumed that traits directly influence behaviour (Matthews, et al., 2009).
Personality traits offer a comprehensive framework for understanding the whole person, this includes an understanding of the species-typical characteristics of human nature, the individual differences in humans and the exclusive pattern of every individual human. Identifying the different traits of human personality has been a fundamental goal in psychology research. Measuring personality traits is often done with the help of the Big Five Inventory (BFI). The Big Five is the most ubiquitous, established and well-validated model of personality consisting out of five factors (see table one): openness to experience, conscientiousness, extraversion, agreeableness and neuroticism (versus emotional stability) together they make the OCEAN of personality. The five traits are found across cultures and have a strong predictable validity (Denissen, Geenen, Van Aken, Gosling, & Potter, 2008).
Openness to experience involves that an individual has an active imagination, aesthetic sensibility, attentiveness to inner feelings, preference for variety and intellectual curiosity (Costa & McCrae, 1992). This involves that individuals are more appreciative of arts, have an inclination to try new activities and are therefore seen as more creative (Matthews, et al., 2009).
Conscientiousness is seen as the tendency of being deliberate, organized and having self-discipline. High levels of conscientiousness lead to individuals who are hardworking and reliable, when taken to extreme, individuals are perfectionistic, or workaholic. Individuals who score low on conscientiousness tend to be more laid back and less driven by success, but not necessarily lazy (Costa & McCrae, 1992).

Extraversion is the habit of being primarily concerned with what is outside the self, this is opposite from introversion which is the state or tendency toward being predominantly concerned with and interested in one's own life (Costa & McCrae, 1992). Where extraverts are social, assertive and tend to seek out excitement, introverts tend to be more reserved, less outgoing and less sociable. This does not mean that an introvert individual is a 'loner', but they do tend to have fewer friends, are less outspoken in large groups and take pleasure in solitary activities. Important to know is that extraversion and introversion don't describe social discomfort but give an insight in social preference. Extraversion and introversion are seen as a single continuum (Matthews, et al., 2009).
Agreeableness is the trait of being pleasant in social situations. Individuals who score high on agreeableness tend to be empathic, considerate, friendly, helpful and see other in a positive light. Those who score low on agreeableness have the tendency to be more competitive than cooperate, are less concerned with other peoples well-being and are more manipulative in social situations (Costa & McCrae, 1992).
Neuroticism is the disposition to experience negative emotions states. When an individual scores high on neuroticism they are more likely to experience feelings as anxiety, anger, guilt or have a depressed mood (Costa & McCrae, 1992). This causes the individual to respond poorly on stress, have a tendency to experience ordinary situations as threatening and deal with minor frustration as more difficult. On the other hand, when an individual scores low on neuroticism, people are more emotionally stable and tend to react less on stress. Individuals are then seen as calm and less likely to be tense. Although they are low in negative emotions, this does not mean that they are high on positive emotions, because this is more an element of the trait extraversion (Matthews, et al., 2009).

Table 1. The five personality traits and their associated definitions (Matthews, et al., 2009)

Trait	**Facets associated with the traits**
Openness to experience	Fantasy, aesthetics, feelings, actions, values, ideas
Conscientiousness	Competence, order, dutifulness, achievement striving, self-discipline, deliberation
Extraversion	Warmth, gregariousness, assertiveness, activity, excitement seeking, positive emotions
Agreeableness	Trust, straightforwardness, altruism, compliance, tender-mindedness, modesty
Neuroticism	Anxiety, angry hostility, depression, self-conscientiousness, impulsiveness, vulnerability

The concept of personality traits seems to have a genetic component, but all five factors also show an influence from the environment. In studies with twins it was found that both heredity and environment contributed in about equal proportions. Personality shows a high degree of stability during adulthood, although a 'maturation effect' is visible; agreeableness and conscientiousness typically increases over time and extraversion, openness and neuroticism tend to decrease (Matthews, et al., 2009). Besides the BFI there's also Eysenck (1991) three factor model. This model is based on the three traits of extraversion, neuroticism and psychoticism and is proposed as alternative to the BFI. However, the two models are related as psychoticism is negatively related to agreeableness and conscientiousness (Costa & McCrae, 1992).

2.6 Theoretical framework

In this paragraph, the concepts that are actually going to be used for analysing the data will be discussed. As said, the mental hierarchy will be used to combine both cognitive and emotion

concepts in human dimensions of wildlife research. However, studying all the concepts that are included in the mental hierarchy isn't possible within one thesis. From the mental hierarchy, four concepts are chosen to empirically assess, these concepts are:

- personality traits
- wildlife value orientations
- emotional dispositions
- attitudes and norms towards specific situations.

The concept of personality traits is chosen because it adds something new to the domain of human dimensions of wildlife, the relationship of personality traits and wildlife was never researched before. Wildlife value orientations is selected because this concept, in contrary to personality traits, is studied substantially in this context and the results of this thesis can therefore be linked to other studies. With the concept of emotional dispositions, different emotions towards species or situations can be typified, this can be interesting in combination with personality traits and wildlife value orientations. Attitudes and norms towards a specific situation gives one the opportunity to measure very specific situations and because this concept is closest to behavioural intentions in the hierarchy, it is closest concept of these four concepts to explaining actual behaviour. In this thesis, the concept of attitudes and norms is assessed as the specific concept of 'the acceptability of management strategies for wildlife'. In total, four concepts are going to be assessed, two cognitive and two concepts with emotional aspects, all on a different point of specificity in the hierarchy.

The mental hierarchy suggests that these concepts are related to each other, the objective of this thesis is to assess if these concepts in fact correlate. Figure four visualizes the assumed relationships between the concepts. Just as the cognitive and mental hierarchy, this model moves upwards from less specific to more specific concepts, where personality traits is the most specific concept, followed by wildlife value orientations, then emotional dispositions and acceptability of management strategies for wildlife as most specific concept. From this model it becomes clear that it's assumed that personality traits influences wildlife value orientations and emotional dispositions towards wildlife. Wildlife value orientations and emotional dispositions towards wildlife are assumed to influence the acceptability of management strategies for wildlife. The models also offers the possibility to assess if an emotional concept has an added value to a cognitive concept.

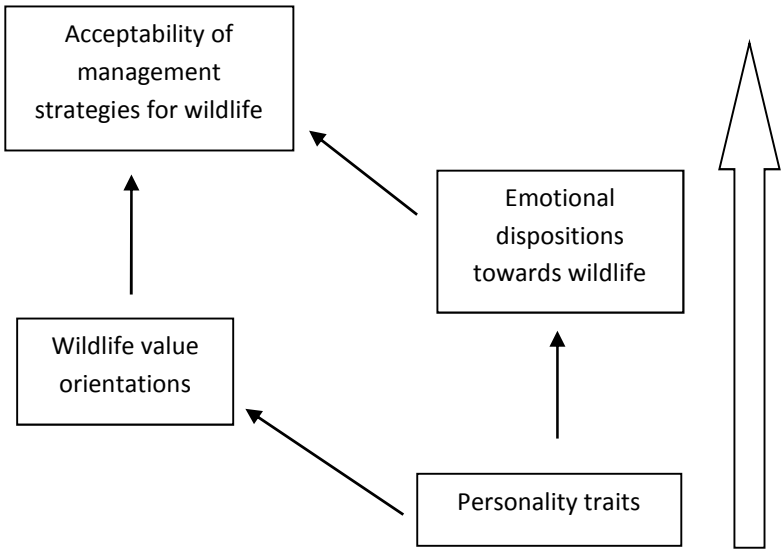

Figure 4. The model of the conceptual framework

2.7 Research questions

The previous paragraph provided a theoretical framework for the research questions of this thesis. Within this research, the goal isn't to start a new research tradition but to answer certain questions with the help of the mental hierarchy. Wildlife value orientations explain the acceptance of management actions up to 50%, which leave about half not yet explained. The mental hierarchy might be able to explain this missing part that could be highly influenced by emotions of people (Manfredo, 2008).

The research questions are directly derived from the conceptual framework of figure four and will therefore be:

1. To what extent do personality traits have predictive power for wildlife value orientations?
2. To what extent do personality traits have predictive power for emotional dispositions towards wildlife?
3. To what extent do wildlife value orientations have predictive power for the acceptability of management strategies for wildlife?
4. To what extent do emotional dispositions towards wildlife have predictive power for the acceptability of management strategies for wildlife?
5. To what extent do emotional dispositions have an added value to wildlife value orientations in explaining the acceptability of management strategies for wildlife?

These research questions combine emotion and cognition as well as trait and state concepts. The combination of these concepts will probably improve our general understanding of human-wildlife relationships (Manfredo, 2008) and could therefore also contribute to the preservation of wildlife.

CHAPTER 3
Methods

3.1 Introduction

In this study, existing theories and measurement instruments of several concepts are combined with new measurement instruments and new theories. For quantitative research in the form of a questionnaire is chosen. The main reason for choosing quantitative methods over qualitative methods is that the goal of this thesis is to investigate the relationship between concepts, more specific, to examine the predictive power of concepts, which is only possible with quantitative methods in the form of a questionnaire. Survey research is useful for describing characteristics of a larger population and when using consistent questions one can compare different groups of people. There are also some disadvantages for using questionnaires. Questionnaires aren't flexible so the questions should be understandable for every single respondent in one time (Vaske, 2008). There's enough qualitative research done on the different subjects (personality traits, emotions, wildlife) that variables for quantitative research can be created.
This chapter will explain how the theories and concepts discussed in the theoretical framework will be identified and assessed empirically. To answer the research questions, four concepts needed to be measured:

- Personality traits
- Wildlife value orientations
- Emotional dispositions towards wildlife
- Acceptability of management strategies for wildlife.

The questionnaire exists out of five parts, the first four parts measuring the previously mentioned concepts and the last part consisting out of a few demographic questions. The complete questionnaire can be found in the appendix. Single item indicators as well as multiple item indicators are used in this questionnaire.
In the first four paragraphs of this chapter there will be described what the possibilities are to empirically assess the concepts that needed measurement for this thesis. Then two paragraphs will explain how the data is collected and analysed and the latter paragraph will assess the limitations of this study.

3.2 Personality traits

There were a number of requirements for measuring personality traits in this questionnaire; the measurement instrument should be reliable (also in the Netherlands), not too long (to prevent mental fatigue of respondents) and suitable for self-assessment. There are numerous measurement instruments for personality but the most widely used and validated model is the Big Five Inventory (BFI). The Revised NEO Personality Inventory, or NEO PI-R, developed by Costa and McCrae (1992) is a 240 items measurement of the Big Five, for use with adult men and women without overt psychopathology. The short version, the NEO-Five Factor Inventory (NEO-FFI), has 44 items where every domains accounts for eight (extraversion and neuroticism), nine (agreeableness and conscientiousness) or ten (openness to experience) items. There are two forms of the NEO, one based upon self-report and one for observer rating (Costa & McCrae, 1992). Because most people cluster around the average, the five traits test score approximate a normal distribution, given a large enough sample of people (Costa & McCrae, 1992).
Denissen et al. (2008) translated the English version of the NEO-FFI into Dutch (see table two).

Table 2. Items of personality traits

Personality traits	
Traits	**Item**
Extraversion	Is talkative
	Tends to be quiet
	Is reserved
	Is sometimes shy, inhibited
	Generates a lot of enthusiasm
	Is outgoing, sociable
	Is full of energy
	Has an assertive personality
Neuroticism	Is depressed, blue
	Can be tense
	Worries a lot
	Is relaxed, handles stress well
	Is emotionally stable, not easily upset
	Remains calm in tense situations
	Gets nervous easily
	Can be moody
Agreeableness	Starts quarrels with others
	Is sometimes rude to others
	Can be cold and aloof
	Tends to find fault with others
	Is considerate and kind to almost everyone
	Has a forgiving nature
	Is helpful and unselfish with others
	Is generally trusting
	Likes to cooperate with others
Conscientiousness	Tends to be disorganized
	Tends to be lazy
	Is easily distracted
	Can be somewhat careless
	Does a thorough job
	Perseveres until the task is finished
	Is a reliable worker
	Does things efficiently
	Makes plans and follows through with them
Openness to experience	Has few artistic interests
	Prefers work that is routine
	Likes to reflect, play with ideas
	Is inventive
	Values artistic, aesthetic experiences
	Is original, comes up with new ideas
	Is ingenious, a deep thinker
	Is curious about many different things
	Has an active imagination
	Is sophisticated in art, music, or literature

The translation was done by letting two persons independently translate the 44 items of the English version. Five expert judges then decided on the best translation by joint consensus. After that, two bilingual students (Dutch-English) translated the Dutch version back into English. When the two versions differed, the final translation was chosen by consensus between two of the authors and the bilingual students. After having a translation available, the Dutch BFI was tested within a sample of 6,948 Dutch-speaking internet users. Among others, the relative

independence and internal consistencies of the five scales were tested. All the tests supported the validity of the Dutch BFI, suggesting that it can be used when a short measure of personality is needed. This is why in this research the Dutch BFI of Denissen et al. (2008) (table two) will be used in the questionnaire to measure personality traits. The Dutch BFI contains 44 items and exist out of a 5-point Likert scale, ranging from strongly disagree to strongly agree, respondents are asked to reflect on themselves ("I see myself as someone who") .

3.3 Emotion and emotional dispositions

There are numerous ways to measure emotions and in this paragraph a number of measurement instruments to quantitatively assess emotions are mentioned. Only a selection of the most commonly used instruments will be discussed, because there are too many emotion measurement instruments to discuss in one thesis. Unlike with the concept of personality traits measurement there's not one emotion measurement that stands out. The advantages and disadvantages of all the measurement instruments will also be discussed.

3.3.1 Dimensional emotion measurement instruments

In this section, six dimensional measurement instruments are deliberated.

The Positive and Negative Affect Schedule (PANAS) was developed by Watson, Clark and Tellegen (1988) to measure basic affect dimensions. PANAS was designed to be a quick, simple and easy assessment of positive and negative affect, where's assumed that the positive and negative scales are largely independent of another, this measurement instrument is thus only based on valence. Positive affect and negative affect are both measured by 10 items with scales that are internally consistent. The emotions PANAS assesses are often high in arousal, emotions low in arousal (e.g. sadness) are not addressed (Gray & Watson, 2007) which might indicate that the existence of two independent scales is an artefact.

There are several measurement instruments based on valence and arousal, core affect is then seen as bipolar with the two dimensions of valence and arousal. The affect grid as described by Russell, Weiss & Mendelsohn (1989) is designed to represent affect terms in the two dimensional space of the circumplex model of affect of Russel (1980). This model gives structure to the affective experience as assessed through self-report. The affect grid exist out of a 9 by 9 grid where the axes are based upon pleasantness to unpleasantness and high arousal to low arousal, participants are asked to check the cell that best describes their feeling. This measurement instrument is especially useful when a short instrument is needed. However, although is shown that the affect grid is reliable and valid, the fact that it's a single item scale can cause problems with testing internal consistency.

The Current Mood Questionnaire (CMQ) was introduced by Feldman Barrett & Russell (1998) to test if the two dimensions of affect, valence and arousal, were completely bipolar. It exists out of three different rating methods with different adjectives and scales, and is therefore very long and complex. Internal consistency is found within the valence dimension, but the arousal scales are not strongly negatively correlated which could indicate that this dimension is not completely bipolar (Gray & Watson, 2007).

In various measurement instruments core affect is seen as three dimensional. The UWIST Mood Adjective Checklist (UMALC) created by Matthews, Jones, & Chamberlain (1990) measures the affective dimensions of tense arousal, energetic arousal and hedonic tone (which is replicated from Russels (1980) valence). Respondents are asked to check 48 mood adjectives that correspond best to their current mood. The two scales of arousal are independent of each other and are moderately correlated with hedonic tone. However, seeing core-affect as three-dimensional with hedonic tone as third dimension is not a widely accepted view which is a disadvantage of this measurement instrument.

For the Semantic Differential Scale is assumed that core affect exists out of three dimensions; pleasure, arousal and dominance (Mehrabien and Russel, 1974, cited in Bradley & Lang, 1994). This measurement instrument measures the respondents' emotional responses to any situation, object or environment and is thus very usable in environmental psychology and human dimensions of wildlife. It contains 18 semantic differential items, six for every dimension, which makes this method too extensive if more stimuli are used.
The Self-assessment Manikin (Gosling, Rentfrow, & Swann, 2003) is based upon the Semantic Differential Scale (Bradley & Lang, 1994). This measurement instrument doesn't rely on verbal self-report; respondents indicate which figure best represent their emotional state. These figures are used to show the pleasure, arousal and dominance dimensions. The advantage of this method is that it's easy usable in non-English speaking cultures without translating and validation issues. SAM was first implemented as a computer program but was later extended to a paper and pen version as well. This method can be used in a variety of situations ranging from emotional reactions to pictures and sounds to emotional reactions to painful stimuli. Using SAM solves problems with respondents getting bored during verbal self-report and emotional measurements involving children (Bradley & Lang, 1994). A disadvantage is the few number of items, which makes it almost impossible to test the reliability, besides that, this measurement not very specific.
The six just reviewed measurement instruments range from extremely long questionnaires to single grids and visual instruments, the difference between these instruments is considerable.

3.3.2 Discrete emotional measurement instruments

When measuring discrete feelings, one assumes that every emotion (e.g., anger, sadness) corresponds to a unique profile in experience, physiology and behaviour (Mauss & Robinson, 2009). Several measurement instruments address specific feelings and moods based on the assumption that the emotional experience is characterized by a number of well-defined elements, significantly different in content (Gray & Watson, 2007), three instruments will be discussed in this section.
The Different Emotions Scale IV (Blythe, Overbeeke, Monk, Wright, & Desmet) of Izard et al. (1993) measures twelve emotions; interest, joy, surprise, sadness, anger, disgust, contempt, fear, shame, shyness, guilt and hostility inwards. Each scale is composed out of three items, respondents are asked to rate their current feelings or long-term traits on a 5-point scale. DES shows only low to moderate internal consistencies, this could be due to the small number of items per scale or to a measurement instrument that's not completely reliable.
PrEmo is based on visual self-report, it uses 14 animations of a specific emotion. Respondents indicate how strongly a stimulus makes them experience an emotion represented by the animation. It's possible for respondents to pick more than one specific emotion which makes PrEmo suitable for studies based upon mixed emotions. Since this instrument was designed to measure emotional response to design, it could probably also be applicable in the field of human dimensions of wildlife. Again, as with SAM, the advantage of visual self-report is that it's faster and less boring for respondents than verbal self-report and the advantage PrEmo has over SAM is that due to the animation, the interpretation of the emotions seems to be more clear. A disadvantage is that it's difficult to make results of PrEmo suitable for statistical analysis (Poels and DeWitte, 2006).
The Geneva Emotion Wheel presented by Scherer (2005) consists out of 20 distinct emotion families positioned in a circle. Respondents are asked to indicate which emotion they are currently experiencing and to indicate the intensity of the experienced emotion when confronted with a stimulus. Therefore, for each of the 20 emotions, 4 adjectives with increasing emotional intensity are presented. The Geneva Emotion Wheel has an underlying dimensional

structure of valence and control and fits thus also within the dimensional approach of core affect. The visual design of the Geneva Emotion Wheel should make this instrument more attractive to respondents and causes less fatigue compared to other verbal self-report instruments. However, the disadvantage of this measurement instrument is that it already pushes respondents into a certain frame by visualizing that, for instance, enjoyment is opposite of disappointment.
Just as with the dimensional emotional measurement instruments, the discrete measurement instruments differ considerably in approach, but they all have advantages and disadvantages.

3.3.3 Selected measurement instrument

From the previous review of dimensional as well as discrete measurement instruments it became clear that there's no one straightforward and well validated instrument to measure emotions. This is why for this questionnaire it was chosen to measure emotion in two ways; from the dimensional and discrete perspective, this would rule out certain measurement errors related to the perspective. The purpose of the emotional measurement in this thesis isn't to measure only emotions, but to measure emotional dispositions, which, in this case should be the general emotional tendency that people have towards wildlife. The measurement instrument should therefore be applicable to use as measurement for emotional dispositions.
There are two wildlife species used in this questionnaire to reflect emotions on; the wolf and deer. These two wildlife species are specifically chosen, because they have opposite as well as common trademarks. They are both charismatic mega fauna species, to which respondents often elicit divergent and polarized responses (Bruskotter, Vaske, & Schmidt, 2009). The wolf is a predator and deer are herbivores, this makes their relation to people completely different. Although humans are not the typical prey species of wolves, the fact that a wolf could possibly kill a human could make people fear wolves. For deer this is the complete opposite, it is suggested that people feel more calm when they see a herbivore graze calmly, because this means that there's no predator around. Despite their differences, the two species also have things in common. They are both native to the Netherlands and although there's no stable wolf population in the Netherlands anymore, it is very possible that this is going to happen in the near future.
Another very important condition for the questionnaire of this thesis was that the measurement instrument was not very extensive, because the questionnaire includes several parts. The Current Mood Questionnaire and the Semantic Differential Scale were thus not an option. The PANAS has as big disadvantage that the two scales could be an artefact and will therefore not be used for the questionnaire of this thesis. Besides that, there was a preference for not using images/visual structures in the questionnaire, so the instruments Affect Grid, SAM, PrEmo and the Geneva Emotion Wheel will not be used. This preference is based upon the fact that especially visual structures can already point a respondent in a certain direction. For example in the Geneva Emotion Wheel, where is assumed that certain discrete emotions are opposites of each other, while there's no evidence that this is the case. These conditions let to the conclusion that none of the just reviewed measurement instruments were sufficient enough to use. However, there are certain things of the reviewed instruments that can be used to design two new measurement instruments.
For measuring emotional dispositions based upon the dimensional perspective, it was assumed that emotions could be typified as a scale of arousal and a scale valence. Eight items (see table four) where chosen, placed on a bipolar scale, four for valence and four for arousal. Respondents were asked to indicate their feelings towards wolves or deer on the scale.

Table 3. The dimensional emotional disposition measurement

Valence	**Arousal**
Don't like - Like	Passive - Active
Unpleasant - Pleasant	Relaxation - Tension
Negative - Positive	Without energy - Energetic
Not enjoyable - Enjoyable	Not calm - Calm

The basic six emotions of Ekman (1972) joy, fear, surprise, anger, disgust and sadness were used as items for the measurement of discrete emotions. A seventh item of 'interest', a basic emotion in the list of basic emotions of Izard (1977), was added to the list. The seven items can be found in table three, where is also made visual which emotions are positive, neutral and which emotions are negative. Respondents were asked to fill in how strongly they felt emotions towards either a deer or a wolf. Measuring emotions like this is in fact measuring emotions toward a certain object or situation (in this case a certain wildlife species), which makes it a measurement instrument for emotional dispositions.

Table 4. The discrete emotional disposition measurement

Basic emotions		
Positive	Neutral	Negative
Joy	Surprise	Disgust
Interest		Sadness
		Fear
		Anger

Both measurements were listed on a 7-point scale. Several items used in the dimensional and discrete measurement were used before. Measuring emotional dispositions in this way was chosen because it was short and to the point. The questionnaire included multiple parts so it was important not to cause mental fatigue, or to extent the questionnaire to such a point where respondents would stop because they lost their interest. The other reason for measuring emotional dispositions different from what was already validated was to find out if such a short measurement was also sufficient.

3.4 Wildlife value orientations

Measuring wildlife value orientations was first done by Fulton et al. (1996) in Colorado. Since then, wildlife value orientations are tested in other states of America (Manfredo, et al., 2009) and the Netherlands (Vaske, et al., 2011). For the questionnaire it was therefore chosen to use the wildlife value orientation measurement in its original state. Two reasons were decisive in this matter; this measurement instrument has already proven to work, and when using the exact same instrument, results can be compared to earlier measurements.

The instrument existed out of 19 items, on a 7-point Likert scale ranging from strongly disagree to strongly agree. Respondents were asked to indicate the extent to which they disagreed or agreed with each statement. As can be seen in table five, six statements were related to the domain of appropriate use beliefs, five statements to the domain of caring towards wildlife and four to hunting beliefs and social affiliation.

Table 5. Items of wildlife value orientations

Domination	
Appropriate Use beliefs	Humans should manage fish and wildlife populations so that humans benefit.
	The needs of humans should take priority over fish and wildlife protection.
	It is acceptable for people to kill wildlife if they think it poses a threat to their life.
	It is acceptable for people to kill wildlife if they think it poses a threat to their property.
	It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.
	Fish and wildlife are on earth primarily for people to use.
Hunting beliefs	We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.
	Hunting is cruel and inhumane to the animals.
	Hunting does not respect the lives of animals.
	People who want to hunt should be provided the opportunity to do so.
Mutualism	
Caring beliefs	We should strive for a world where humans and fish and wildlife can live side by side without fear.
	I view all living things as part of one big family.
	Animals should have rights similar to the rights of humans.
	Wildlife are like my family and I want to protect them.
	I care about animals as much as I do other people.
Social affiliation	It would be more rewarding to me to help animals rather than people.
	I take great comfort in the relationships I have with animals.
	I feel a strong emotional bond with animals.
	I value the sense of companionship I receive from animals.

3.5 Acceptability of management strategies for wildlife

To assess attitudes and norms empirically in specific situations one must think careful about designing and structuring the questions. The goal of this measurement instrument was to get insight into how acceptable people think several management actions are in specific situations towards specific animals. This resulted in an instrument where three things were changeable; the severity of the situation, the management action and the animal the management action was applied to. This concept is the most specific of the four concepts, which results in a specific measurement instrument. Again, the wolf and deer are chosen, for the same reasons as mentioned in paragraph 3.3. Three situations per animal were described, and in each situation five management actions were possible, they can be found in table six. These management actions were adapted from (Vaske & Taylor, 2006).

Table 6. The five possible management actions

Management actions
Do nothing
Monitor the situation
Educate the public
Capture and relocate the wolves/deer
Destroy the wolves/deer

The three situations moved up gradually in amount of invasiveness from the animal just being spotted in a nature area to the animal causing economic damage to the last situation where the animal was responsible for causing the death of a human, see table seven.
As can be seen in table seven, an attempt is made to come up with situations that are in a way the same for the two different wildlife species and are possible in the Netherlands now or in the near future. This gives the opportunity to compare the emotional reaction of respondents toward management actions for the two species. For every situation respondents were asked to rate the acceptability of the management action used to address the situation on a 7-point Likert scale ranging from very unacceptable to very acceptable. In table eight one can see an example of how this measurement instrument was presented in the questionnaire.

Table 7. The three situations per wildlife species used in the questionnaire

Situations	
Wolf	**Deer**
"A pack of wolves lives in a large nature area. There's a chance that hikers see them."	"A population of deer lives in a large nature area. There's a chance that hikers see them."
"Wolves living in a large nature area have attacked several lambs on a nearby farm."	"Deer living in a large nature area have destroyed or eaten crops on a nearby farm."
"Wolves living in a large nature area have attacked and killed a hiker."	"Deer living in a large nature area have caused a car accident on a road crossing the area. One person did not survive."

Table 8. An example of how the acceptability of management strategies is measured in the questionnaire

SITUATION 1							
A pack of wolves lives in a large nature area. There's a chance that hikers see them.							
How unacceptable or acceptable is it if wildlife agencies:	Very unacceptable			Neutral			Very acceptable
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the wolves	1	2	3	4	5	6	7
5. Destroy the wolves	1	2	3	4	5	6	7

3.6 Data collection

The aim of this research was to assess relationships across several concepts, the model of the mental hierarchy in specific, and not to look at portions of a population. Mail questionnaires in the Netherlands generally have a low response rate and are expensive. Therefore it was chosen to ask students of the Wageningen University to participate in the questionnaire. The strategy was as following: At the end of a lecture students were asked to stay for a few more minutes. It was introduced that there was a graduate student doing her thesis and that their help was needed filling in paper and pen questionnaires but that the participation to the questionnaire was voluntary. Every student then got a questionnaire to take home or fill in immediately. The same group of students was then visited two more times, once to pick up questionnaires and to hand out questionnaires to people who weren't there the first time or who lost it and once to collect the last filled in questionnaires. This procedure was repeated ten times, visiting different study directions and study years. The language of the questionnaire was both in Dutch and

English, Dutch students could participate in a Dutch questionnaire and foreign students could fill in the English one. When dealing with emotions, it seems that people can express themselves way better when they are able to answer questions in their first language. Of the 607 questionnaires that were distributed to the students, 369 questionnaires were returned, which is an overall response rate of 64.5%. The sample consisted of 35.6% males and 64.4% females, average age was around 20 (m = 20.6, sd = 3.03).

3.7 Data analysis

Personality traits have been studied extensively but not in the context of human dimensions of wildlife, this in contrary to a measurement instrument like wildlife value orientations and emotional response which are more specific. The questionnaires were processed in SPSS.

The consistency of responses to a set of items designed to measure a specific concept is defined as the measurement reliability. It measures the consistency in the pattern of the respondents' answers (Vaske, 2008). Internal consistency rates how consistent respondents answer questions within a scale of items for measuring one concept. Cronbach's alpha measures the extent in which the answers of the respondents to a certain scale of items correlate to each other and is therefore a valid measurement for examining the reliability (Vaske, 2008).

To create the five variables of personality traits (extraversion, neuroticism, conscientiousness, agreeableness and openness to experience) several negatively stated items were reverse coded prior to creating the new variables. Within wildlife value orientations the variables were as following; four variables for the four specific concepts (appropriate use beliefs, caring beliefs, hunting beliefs and social affiliation). The two variables domination (existing of appropriate use beliefs and hunting beliefs) and mutualism (existing of caring beliefs and social affiliation) were created with equal weightings for the two specific variables, which means, for example, that caring beliefs and social affiliation have the same influence on mutualism, even though caring beliefs exists out of more items.

For emotion, three variables were created; arousal, valence, and discrete emotions without the emotion surprise. Surprise is not included in the list of emotions, because it's not a negative or positive stated emotion which makes it hard to include into one variable. All the emotion variables were created for wolf and deer separately, which comes to a total of six variables for emotion. For the variables of wildlife value orientations and emotion the negatively stated items where reverse coded prior to analysis.

To assess the acceptability of management strategies, the variable 'the acceptability of lethal control' was created for the wolf as well as deer. This variable existed out of the items 'destroy the wolves/deer' for every situation (three in total).

Descriptive results were obtained with frequencies for means and standard deviations for all the variables. The inferential statistics existed of independent t-tests, paired samples t-tests and regressions models. Robinson and Levin (1997, cited in Vaske, 2008) introduced a two-step procedure for the evaluation and reporting of empirical results "first convince us that a finding is not due to chance and only then, assess how impressive it is". This indicates that a result can only be given account to when there's a statistically significant finding.

The independent t-test was used to determine if there was a significant difference in the means for males and females for all the four concepts. The independent variable was in this case the dichotomous variable 'gender' and the independent variables were the four concepts, which are continuous variables. The differences between two means is interpreted with the Cohen's *d*, the formula to estimate the effect size is:

$$\frac{\mu 1 - \mu 2}{\sqrt{\frac{(\sigma 1)^2 + (\sigma 2)^2}{2}}}$$

Where 0.20 stands for a minimal relationship, 0.50 for a typical and 0,80 for a substantial relationship (Vaske, 2008). The paired samples t-test was used to determine if there were significant differences in the means of emotional dispositions towards either wolves or deer. The independent variable was 'wildlife species' which is dichotomous (wolf or deer) and the emotional dispositions were the continuous dependent variable. The relationship between the two means was described by the Pearson's correlation, where 0.10 stands for a minimal relationship, 0.3 for a typical and 0.5 for a substantial relationship (Vaske, 2008).
If all the variables are continuous, they have an ordered set of response categories with a distribution that is approximately normally distributed in the sample. To analyse these types of variables, one should use a regression in SPSS (Vaske, 2008). Therefore, regressions were used to examine the relationships between the four concepts as presented in the conceptual framework (figure four). The independent variable is always the variable lower in the mental hierarchy, which means that the independent variable is more likely to transcend situations. For example, when the relationship between personality traits and wildlife value orientations is assessed, personality traits is the independent variable and wildlife value orientations the dependent one. Personality traits are lower in the mental hierarchy which means that they are they transcend situations whereas wildlife value orientations are more specific, numerous and faster to change. This is why personality traits are first to recall in a person and wildlife value orientations follow, which is the reason for personality traits being the independent variable. The relationships between the four concepts is described with the Pearson's correlation when the relationship between two continuous variables is assessed. A regression model with more than one independent variable (e.g., wildlife value orientations and emotional dispositions) is a multiple regression. The relationship is then described with the multiple regression coefficient where 0.14 stands for a minimal relationship, 0.36 for a typical and 0.51 for a substantial relationship.

3.8 Limitations

In every research there are limitations that influence the results, the researchers' job is to minimize these limitations. In general, the biggest limitation of quantitative research is that it isn't flexible, respondent aren't able to explain their answer and researchers aren't able to explain the questions, which could inflict measurement errors. While processing the questionnaires this became very clear, some respondents wrote explanations next to their answers, extra information that can't be processed in SPSS. Even if the questions of the questionnaire are very clearly stated, there are still respondents who felt the need to explain their answer. Other comments of respondents pointed out another disadvantage of questionnaires; they can seem artificial (Vaske, 2008). Although all the questions were based on situations that could actually occur in the Netherlands, still the questions were hypothetical.
Most of the respondents were Dutch, but there are also a number of respondents who filled in the questionnaire in English, which was probably not their mother-tongue. This could have caused difficulties because when dealing with emotions, people can express themselves better in their own language. To minimize these limitations of the questionnaire, much effort was put into creating understandable and reasonable questions, designing a professional layout and making sure that the questionnaire was not too long.
As discussed in paragraph 3.5, the respondents were all students of Wageningen University, which makes the sample not useful to describe characteristics of the population of the Netherlands, but still gives one the opportunity to assess relationships across concepts, which is the aim of this study.
In the first part of the questionnaire, wildlife value orientations are measured. The original measurement instrument is used which means that the results can be compared to prior

studies, but one of the items has a double question in it ("Wildlife are like my family and I want to protect them"). This could cause confusion among respondents if they, for example, want to protect wildlife, but don't see them as family. Still, the original wildlife value orientations measurement was chosen because the advantage of using this measurement instrument compensates the disadvantage of using this question.

In part B of the questionnaire, the attitudes and norms of the respondent are assessed. As previously described in paragraph 3.4, there were three situations per animal. The situations were designed in such a way that they were comparable, which is a challenge when two very different wildlife species are used. The second situation describes wildlife causing economic damage; a wolf killing lambs and deer eating crops, the question is whether respondents see this as something that is comparable. It's possible that respondents see the killing of a lamb as something worse than the destroying of crops, while the economic damage is the same. On the other hand, this part of the questionnaire is all about assessing the attitudes and norms of respondents, so if there is a significant difference in the response, this is measured.

To conclude, quantitative research and this questionnaire in specific, has its limitations, but with carefully designing the questionnaire, the advantages are bigger than the disadvantages and conclusions can be drawn from the collected data.

CHAPTER 4
Results

4.1 Introduction

In this chapter the objective will be to present the results of the data collected from the questionnaire. The chapter will start with a paragraph in which the reliability of the concepts is shown, then the descriptive results and gender differences of the four concepts are assessed. The results of the linear regression models will be assessed in fourth paragraph and the chapter will end with a paragraph where the results of the linear regressions are presented in the conceptual framework. Not all the results extracted from the questionnaire are included in this result chapter, the questionnaire provided too much data for one thesis.

4.2 Scale analysis

In this paragraph the results of the reliability test of the four concepts will be presented. Cronbach's alpha was used to examine the reliability of each multi-item scale. The means and standard deviations of every item (except for the discrete emotions) can also be found in the tables. All the five personality traits have an acceptable level of internal consistency (table nine); neuroticism $\alpha = 0.83$, extraversion $\alpha = 0.82$, openness to experience $\alpha = 0.77$, conscientiousness $\alpha = 0.82$ and agreeableness $\alpha = 0.76$. Within every trait concept (except for neuroticism) there were one or two items that had a Pearson correlation of <0.40, but dropping these items from the scale improved little or nothing to the Cronbach's Alpha and would inflict that the results are not comparable to other personality trait research.

As discussed in chapter two, the means of the personality items should be around the neutral point, if the sample is large enough. In table 9 one can see that in fact the means are around the neutral point, with a few exceptions. The standard deviations of the items are equivalent to the research done by Denissen et al. (2008) where the standard deviations ranged from 0.87 to 1.28 compared to 0.84 to 1.32 in this sample.

Table 9. Reliability analysis for personality traits

Personality traits **Survey item** [1]			**Reliability Analysis**		
	Mean	**(SD)**	**Item Total Correlation**	**Alpha if Item Deleted**	**Cronbach's Alpha**
Neuroticism					0.83
Worries a lot	0.27	(1.16)	0.62	0.80	
Can be tense	0.46	(1.05)	0.59	0.81	
Is relaxed, handles stress well[2]	-0.30	(1.17)	0.68	0.80	
Gets nervous easily	0.04	(1.22)	0.56	0.81	
Is emotionally stable, not easily upset[2]	-0.52	(1.19)	0.59	0.81	
Remains calm in tense situations[2]	-0.56	(1.09)	0.54	0.82	
Is depressed, blue	-0.99	(1.06)	0.48	0.82	
Can be moody	0.23	(1.08)	0.40	0.83	
Extraversion					0.82
Is talkative	0.61	(1.18)	0.68	0.78	
Tends to be quiet[2]	0.29	(1.22)	0.72	0.78	
Generates a lot of enthusiasm	0.50	(0.91)	0.47	0.81	
Is outgoing, sociable	0.69	(0.94)	0.50	0.81	
Is reserved[2]	-0.13	(1.09)	0.61	0.79	
Has an assertive personality	0.70	(1.02)	0.46	0.82	

Personality traits Survey item [1]			Reliability Analysis		
	Mean	(SD)	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Openness to experience					0.77
Likes to reflect, play with ideas	0.95	(0.87)	0.47	0.74	
Is inventive	0.73	(0.84)	0.47	0.74	
Values artistic, aesthetic experiences	0.08	(1.36)	0.60	0.72	
Is original, comes up with new ideas	0.61	(0.90)	0.52	0.74	
Is ingenious, a deep thinker	0.89	(0.81)	0.35	0.76	
Has an active imagination	0.84	(1.11)	0.38	0.75	
Is curious about many different things	1.35	(0.77)	0.40	0.75	
Is sophisticated in art, music or literature	-0.24	(1.32)	0.48	0.74	
Has few artistic interests[2]	0.30	(1.21)	0.55	0.73	
Prefers work that is routine[2]	0.33	(1.16)	0.17	0.78	
Conscientiousness					0.82
Does a thorough job	0.84	(0.93)	0.66	0.79	
Perseveres until the task is finished	0.78	(1.04)	0.60	0.78	
Tends to be disorganized[2]	0.25	(1.30)	0.57	0.80	
Tends to be lazy[2]	0.30	(1.24)	0.62	0.79	
Is a reliable worker	1.09	(0.84)	0.54	0.80	
Does things efficiently	0.59	(1.03)	0.44	0.81	
Makes plans and follows through with them	0.61	(0.99)	0.55	0.80	
Is easily distracted[2]	-0.40	(1.19)	0.43	0.82	
Can be somewhat careless[2]	0.37	(1.07)	0.37	0.82	
Agreeableness					0.76
Is considerate and kind to almost everyone	0.89	(0.95)	0.54	0.72	
Has a forgiving nature	0.81	(0.99)	0.52	0.72	
Is helpful and unselfish with others	0.81	(0.87)	0.43	0.73	
Starts quarrels with others[2]	1.37	(0.89)	0.41	0.74	
Is sometimes rude to others[2]	0.49	(1.26)	0.49	0.72	
Can be cold and aloof[2]	0.40	(1.17)	0.54	0.72	
Is generally trusting	0.80	(1.01)	0.39	0.74	
Tends to find faults with others[2]	-0.46	(1.03)	0.37	0.74	
Likes to cooperate with others	0.52	(1.01)	0.24	0.76	

[1] Variables coded on 5–point scales ranging from –3 (strongly disagree) to +3 (strongly agree)
[2] Item was reverse coded prior to analysis

The two specific variables of domination and mutualism within the concept of wildlife value orientations both show reliability, as is shown in table ten. The Cronbach's Alpha for domination (a combination of the two variables 'appropriate use beliefs' and 'hunting beliefs') was 0.80 and 0.88 for mutualism (a combination of the variables 'social affiliation beliefs' and 'caring beliefs'). Except for two items, all the item correlations were <0.40. Dropping that specific item wouldn't have improved the overall Cronbach's Alpha. The results of the reliability test are comparable to the research of Vaske, Jacobs and Sijtsma (2011) and although the Cronbach's Alpha in that research was a bit higher (e.g., 0.85 compared to 0.80 for domination) the similarity was that the Cronbach's Alpha was never higher if a specific item was deleted.

Table 10. Reliability analysis for wildlife value orientations

Wildlife Value orientation Basic belief dimension Survey item [1]	Mean	(SD)	Reliability Analysis Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha	
Domination						0.80
Appropriate Use Beliefs					0.76	
Humans should manage fish and wildlife populations so that humans benefit.	-0.33	(1.67)	0.43	0.74		
The needs of humans should take priority over fish and wildlife protection.	-1.05	(1.62)	0.54	0.71		
It is acceptable for people to kill wildlife if they think it poses a threat to their life.	0.61	(1.54)	0.56	0.71		
It is acceptable for people to kill wildlife if they think it poses a threat to their property.	-0.67	(1.57)	0.61	0.69		
It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.	-0.08	(1.58)	0.37	0.76		
Fish and wildlife are on earth primarily for people to use.	-1.94	(1.33)	0.51	0.72		
Hunting Beliefs					0.72	
We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	-0.68	(1.48)	0.26	0.79		
Hunting is cruel and inhumane to the animals. [2]	0.57	(1.66)	0.69	0.54		
Hunting does not respect the lives of animals. [2]	0.48	(1.73)	0.63	0.58		
People who want to hunt should be provided the opportunity to do so.	-0.42	(1.54)	0.49	0.67		
Mutualism						0.88
Social Affiliation Beliefs					0.80	
We should strive for a world where humans and fish and wildlife can live side by side without fear.	0.90	(1.67)	0.45	0.82		
I view all living things as part of one big family.	-0.29	(1.85)	0.70	0.71		
Animals should have rights similar to the rights of humans.	-0.75	(1.74)	0.66	0.73		
Wildlife are like my family and I want to protect them.	-0.83	(1.63)	0.67	0.73		
Caring Beliefs					0.77	
I care about animals as much as I do about other people.	-0.37	(1.82)	0.47	0.80		
It would be more rewarding to me to help animals rather than people.	-0.81	(1.80)	0.59	0.71		
I take great comfort in the relationships I have with animals.	1.28	(1.24)	0.51	0.74		
I feel a strong emotional bond with animals.	0.31	(1.64)	0.68	0.68		
I value the sense of companionship I receive from animals.	0.87	(1.57)	0.63	0.70		

[1] Variables coded on 7–point scales ranging from –3 (strongly disagree) to +3 (strongly agree)
[2] Item was reverse coded prior to analysis

The emotional response of respondents towards the management action 'lethal control' also needed to be tested on reliability and the results can be found in table eleven. The inter item correlation is all above 0.71 and the Cronbach's Alpha are 0.85 for the wolf and 0.88 for deer which makes these concepts useable for further analysis.

Table 11. Reliability analysis for the acceptability of lethal control

Acceptability of lethal control			**Reliability Analysis**		
Survey item [1]	**Mean**	**(SD)**	**Item Total Correlation**	**Alpha if Item Deleted**	**Cronbach's Alpha**
Wolf					0.85
A pack of wolves lives in a large nature area. There's a chance that hikers see them.	-2.32	(1.21)	0.72	0.83	
Wolves living in a large nature area have attacked several lambs on a nearby farm.	-1.91	(1.48)	0.83	0.70	
Wolves living in a large nature area have attacked and killed a hiker.	-1.28	(1.88)	0.71	0.86	
Deer					0.88
A population of deer lives in a large nature area. There is a chance that hikers see them.	-2.68	(0.87)	0.74	0.86	
Deer living in a large nature area have destroyed or eaten crops on a nearby farm.	-2.54	(0.97)	0.85	0.75	
Deer living in a large nature area have caused a car accident on a road crossing the area. One person did not survive.	-2.37	(1.23)	0.75	0.87	

[1] Variables coded on 7–point scales ranging from –3 (very unacceptable) to +3 (very acceptable)

The reliability analysis of the discrete emotion measurement showed that the items have internal consistencies. The means and standard deviations will be discussed in the next paragraph. The Cronbach's alpha is 0.74 for the discrete emotions towards the wolf (table twelve). The discrete emotion 'surprise' is not included in this measurement, because it's not possible to interpret this item as either a positive or a negative emotion. Two items (fear and sadness) have an inter item correlation of slightly lower than 0.40, but dropping these items from the scale would not improve the overall Cronbach's Alpha.
For the items of discrete emotions towards deer (table twelve), the internal consistency is lower than for the wolf, but the items still show internal consistencies with an alpha of 0.71. As with discrete emotions towards the wolf, there are two items with an inter item correlation lower than 0.40 (fear and interest) but again, dropping these items would not improve the overall Cronbach's Alpha.

Table 12. Reliability analysis of discrete emotions towards the wolf and deer

Discrete emotions towards the wolf and deer Survey item [1]	Wolf Reliability Analysis			Deer Reliability Analysis		
	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha	Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Discrete emotions			0.74			0.71
Joy	0.48	0.71		0.41	0.69	
Fear[2]	0.39	0.73		0.32	0.71	
Anger[2]	0.63	0.66		0.63	0.62	
Disgust[2]	0.63	0.68		0.64	0.62	
Sadness[2]	0.36	0.73		0.43	0.67	
Interest	0.48	0.70		0.36	0.70	

[1] Variables coded on 7–point scales ranging from –3 (not at all) to +3 (very strong).
[2] Item was reverse coded prior to analysis

The reliability analysis of the dimensional measurement of emotional dispositions towards the wolf (table thirteen) showed that although valence was reliable (inter item correlation < 0.40 and Cronbach's Alpha of 0.93), arousal was not. With a Cronbach's Alpha of only 0.50 and three inter item correlations below 0.40, this concept wasn't reliable enough to be used for further analysis. This was the same for the emotional dispositions towards deer (table fourteen), the valence measurement was reliable (correlations < 0.40 and Cronbach's Alpha of 0.89) but the inter item correlations were far below 0.40 and with a Cronbach's Alpha of 0.10 this variable cannot be used.
Both arousal measurements didn't have acceptable levels of internal consistencies, which is in line with Gray & Watson (2007) who state that measuring arousal seems to be extremely difficult.

Table 13. Reliability analysis for the dimensional emotional disposition measurement for the wolf

Valence and arousal towards the wolf Survey item [1]	Mean	(SD)	Reliability Analysis Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Valence					0.93
Don't Like - Like	1.04	(1.61)	0.82	0.92	
Unpleasant - Pleasant	0.32	(1.45)	0.85	0.90	
Negative - Positive	0.82	(1.50)	0.84	0.91	
Not enjoyable - Enjoyable	0.51	(1.49)	0.85	0.91	
Arousal					0.50
Passive - Active	1.10	(1.40)	0.28	0.44	
Relaxation - Tension	0.90	(1.42)	0.44	0.27	
Without energy - Energetic	1.40	(1.19)	0.33	0.40	
Not calm - Calm[2]	0.52	(1.35)	0.14	0.57	

[1] Variables coded on 7–point scales ranging from –3 to +3.
[2] Item was reverse coded prior to analysis

Table 14. Reliability analysis for the dimensional emotional disposition measurement for deer

Valence and arousal towards deer Survey item [1]	Mean	(SD)	Reliability Analysis Item Total Correlation	Alpha if Item Deleted	Cronbach's Alpha
Valence					0.89
Don't Like - Like	1.87	(1.08)	0.71	0.88	
Unpleasant - Pleasant	1.37	(1.20)	0.73	0.86	
Negative - Positive	1.57	(1.12)	0.82	0.84	
Not enjoyable - Enjoyable	1.47	(1.57)	0.79	0.85	
Arousal					0.19
Passive - Active	0.57	(1.35)	0.18	0.05	
Relaxation - Tension	-0.51	(1.36)	0.10	0.19	
Without energy - Energetic	0.81	(1.18)	0.13	0.12	
Not calm - Calm[2]	-1.03	(1.28)	0.00	0.24	

[1] Variables coded on 7–point scales ranging from –3 to +3
[2] Item was reverse coded prior to analysis

The reliability analysis indicated that the three concepts of personality traits, wildlife value orientations, the discrete measurement of emotions and acceptability of lethal control show internal consistencies. For the dimensional measurement of emotional dispositions only the valence measurement was reliable so only this concept will be used as one variable. Therefore, the concepts of personality traits, wildlife value orientations, discrete emotions, valence and acceptability of lethal control will be used for further analysis, which is described in the following two paragraphs.

4.3 Descriptive results and gender differences

This paragraph will give an overview of the descriptive results and gender differences of the four concepts of personality traits, wildlife value orientations, emotional dispositions and the acceptability of lethal control. Presenting these findings will give insight in the sample. All the tables shown in this paragraph are based on items with a scale with zero as neutral point. This gives one the opportunity to immediately see if a variable is positive or negative.

Personality traits are composed out of five variables, the means and standard deviation of the five traits can be found in table fifteen. The variance of the five traits is around average, with only neuroticism as negative, thus people in this sample tend to be more emotional stable. The standard deviation is about the same for all the five variables. The means of males and females within the sample are compared with a t-test. Levene's test for equality of variances was not significant, so equal variances are assumed. There is a significant ($p < 0.001$) difference between males and females for neuroticism where women are more prone to neuroticism than men. For conscientiousness and openness to experience there's also a significant (<0.05) difference between men and women. Women score higher on agreeableness and men are more open to experience. The relationship between the two means is described with Cohen's *d*, only for neuroticism this relationship was between typical and substantial, for the other two variables the relationship was minimal. No significant difference was found for extraversion and agreeableness.

Table 15. Descriptive results and gender differences for personality traits

Personality traits[1]	**Mean**	**(SD)**	**Mean male**	**Mean female**	**Cohen's *d***	**t value**	**p value (2-tailed)**
Extraversion	0.36	(0.70)	0.42	0.33	0.13	1.18	0.24
Neuroticism	-0.17	(0.76)	-0.48	-0.01	0.65	-5.91	<0.001
Conscientiousness	0.41	(0.69)	0.31	0.46	0.22	-2.03	<0.05
Agreeableness	0.63	(0.60)	0.56	0.67	0.18	-1.67	0.10
Openness to experience	0.58	(0.61)	0.67	0.54	0.22	1.99	<0.05

[1]Scale from -2 (strongly disagree) to 2 (strongly agree)

As can be seen in table sixteen, all the wildlife value orientations, except for caring beliefs, are negative, but are still around neutral. Appropriate use beliefs is the most negative variable, with the least variance. In social affiliation, the most variance was measured. Men and women are compared and the Levene's test for equality of variances was not significant, so equal variances are assumed. Women score lower on domination, appropriate use beliefs and hunting beliefs ($p < 0.001$) while men score lower on mutualism and social affiliation ($p < 0.002$ and $p < 0.001$). The relationship between the two means is described with Cohen's *d*, for domination and hunting beliefs the relationship was around typical, for appropriate use beliefs, mutualism and social affiliation the relationship was between minimal and typical. No significant difference between men and women is found for caring beliefs.

Table 16. Descriptive results and gender differences for wildlife value orientations

Wildlife value orientations[1]	**Mean**	**(SD)**	**Mean male**	**Mean female**	**Cohen's *d***	**t value**	**p value (2-tailed)**
Domination	-0.29	(0.97)	-0.08	-0.50	0.57	5.58	<0.001
Appropriate use beliefs	-0.58	(1.04)	-0.33	-0.73	0.38	3.52	<0.001
Hunting beliefs	-0.01	(1.20)	0.46	-0.27	0.63	5.69	<0.001
Mutualism	-0.02	(1.18)	-0.23	0.17	0.32	-3.12	<0.002
Social affiliation	-0.23	(1.37)	-0.58	-0.02	0.41	-3.75	<0.001
Caring beliefs	0.26	(1.27)	0.11	0.35	0.19	-1.75	0.09

[1]Scale from -3 (strongly disagree) to 3 (strongly agree)

Measuring emotional dispositions towards the wolf and deer was done in two ways. In table seventeen one can find the discrete approach of measuring emotions. Between almost every emotion towards the wolf and deer there was a significant difference ($p < 0.001$, except $p < 0.002$ for disgust and no significant difference for interest). Respondents showed more fear, surprise, disgust and sadness towards the wolf, more joy was evoked towards deer. Except for interest, all the emotions toward the wolf were negative. For deer, all the emotions except joy and interest were negative. The relationship between the wolf and deer is described by the Pearson correlation. As can be seen in table seventeen, the relationship between the wolf and deer was between typical and substantial for joy, fear, anger and disgust, and substantial for surprise and sadness.

Table 17. Descriptive results for the discrete measurement of emotional dispositions

Emotional dispositions, discrete[1]								
	Wolf		**Deer**					
	Mean	**(SD)**	**Mean**	**(SD)**		**Correlation**[2]	**t-value**	**p**
Joy	-0.05	(1.89)	1.21	(1.48)		0.44	-11.52	<0.001
Fear	-0.09	(1.71)	-2.06	(1.19)		0.41	17.42	<0.001
Surprise	-0.18	(1.92)	-0.23	(1.95)		0.60	1.08	<0.001
Anger	-2.27	(1.25)	-2.60	(0.92)		0.44	3.40	<0.001
Disgust	-2.50	(1.05)	-2.69	(0.88)		0.45	3.14	<0.002
Sadness	-2.25	(1.25)	-2.53	(1.00)		0.50	3.61	<0.001
Interest	1.61	(1.49)	1.51	(1.37)		0.56	0.17	0.17

[1]Scale from -3 (not at all) to 3 (very strong)
[2]All the correlations are significant at $p < 0.001$

In table eighteen the differences between men and women for the discrete measurement of emotional dispositions towards the wolf is shown. Significant differences between men and women are found for the emotions joy, anger, sadness ($p < 0.01$), fear ($p < 0.001$) and interest ($p < 0.005$). The wolf elicits more joy and interest for men than for women, with a relationship that is between minimal and substantial. Women feel more fear towards wolves than men, this relationship is between typical and substantial. Men experience less anger and sadness when thinking about wolves, with a relationship between minimal and typical.

Table 18. Gender differences for the discrete measurement of emotions dispositions towards the wolf

Emotional dispositions towards the wolf, discrete[1]				
	Mean male	**Mean female**	**Cohen's *d***	**p (2-tailed)**
Joy	0.29	-0.24	0.28	<0.01
Fear	-0.75	0.27	-0.62	<0.001
Surprise	0.32	0.12	0.10	0.33
Anger[2]	-2.48	-2.14	-0.28	<0.01
Disgust[2]	-2.65	-2.40	-0.25	0.03
Sadness[2]	-2.47	-2.12	-0.29	<0.01
Interest[2]	1.91	1.45	0.31	<0.005

[1]Scale from -3 (not at all) to 3 (very strong)
[2]Equal variances not assumed

Table nineteen displays the differences between men and women for the discrete measurement of emotional dispositions towards deer. Fear is the only emotions showing a significant difference ($p < 0.01$). Deer evoke less fear by men, although the means for men and women are both negative. The relationship is between typical and substantial.

Table 19. Gender differences for the discrete measurement of emotions dispositions towards deer

Emotional dispositions towards deer, discrete[1]				
	Mean male	**Mean female**	**Cohen's *d***	**p (2-tailed)**
Joy	1.16	1.22	-0.04	0.72
Fear	-2.29	-1.94	-0.30	<0.01
Surprise	-0.48	-0.10	-0.20	0.08
Anger[1]	-2.55	2.62	0.06	0.58
Disgust[1]	-2.69	-2.68	0.00	0.95
Sadness[1]	-2.55	-2.51	-0.04	0.70
Interest[1]	1.55	1.49	0.04	0.69

[1]Equal variances not assumed

The dimensional approach of measuring emotions can be found in table twenty. Again, there is a significant difference found between the emotions evoked by either the wolf or deer ($p < 0.001$), valence was more evoked by deer. The relationship (Pearson correlation) between the wolf and deer was typical.

Table 21 shows the differences between man and women for valence towards both wildlife species. Only for valence towards wolves shows a significance difference ($p < 0.001$). Men score higher on valence than women, the relationship is typical.

In table 22 is visible that respondents found it more acceptable to carry out lethal control on wolves than on deer, although it's still seen as unacceptable. The Pearson correlation in this case is a substantial relationship and is significant with $p < 0.001$.

Table 20. Descriptive results for the dimensional measurement of emotional dispositions

Emotional dispositions, dimensional[1]								
	Wolf		**Deer**					
	Mean	**(SD)**	**Mean**	**(SD)**		**Correlation[2]**	**t-value**	**p**
Valence	0.67	(1.36)	1.17	(0.99)		0.39	-12.77	<0.001

[1]Scale from -3 to 3
[2]Correlation significant at $p < 0.001$

Table 21. Gender differences for the dimensional measurement of emotions dispositions

Valence towards both wildlife species[1]				
	Mean male	**Mean female**	**Cohen's *d***	**p (2-tailed)**
Valence towards the wolf	1.10	0.45	0.53	<0.001
Valence towards deer	1.60	1.56	0.04	0.75

Table 22. Descriptive results for the acceptability of management strategies

The acceptability of management strategies[1]								
	Wolf		**Deer**					
	Mean	**(SD)**	**Mean**	**(SD)**		**Correlation[2]**	**t-value**	**p value**
Acceptability of lethal control	-1.84	(1.36)	-2.53	(0.93)		0.63	12.60	<0.001

[1]Scale from -3 (very unacceptable) to 3 (very acceptable)
[2]Correlation significant at $p < 0.001$

The differences between men and women for the acceptability of lethal control on both wildlife species can be found in table 23. Women found lethal control less acceptable in both cases with a minimal relationship. The results were significant at a level of $p < 0.05$.

Table 23. Gender differences for the acceptability of lethal control

Acceptability of lethal control on both wildlife species[1]				
	Mean male	**Mean female**	**Cohen's *d***	**p (2-tailed)**
Acceptability of lethal control towards the wolf[2]	-1.65	-1.94	0.18	<0.05
Acceptability of lethal control towards deer[2]	-2.39	-2.60	0.20	<0.05

[1]Scale from -3 (very unacceptable) to 3 (very acceptable)
[2]Equal variance not assumed

4.4 Linear regression models

In this paragraph the relationships as presented in the conceptual framework of chapter two (figure four) will be assessed. This will be done with linear regression models. In every model one or several independent variables are included, which makes it single as well as multiple regressions.

4.4.1 Personality traits and wildlife value orientations

The first linear regression model examined the relationship between personality traits and wildlife value orientations. The independent variable included personality traits with its five different factors.

Table 24 shows the relationships between personality traits and wildlife value orientations assessed as two dimensions. Personality traits showed no significant explaining power for mutualism, but is a predictor for domination ($p < 0.02$) where it explains 0.11. Extraversion has a positive influence on domination ($p < 0.001$), neuroticism and agreeableness a negative one (p 0.001 and $p < 0.01$). Two other two traits didn't show a significant influence on domination.

Table 24. The relationship between personality traits and wildlife value orientations (two dimensions)

	Domination		**Mutualism**	
	R^2 or β	**p**	**R^2 or β**	**p**
Personality traits	0.11 (R^2)	<0.02	0.05 (R^2)	0.14
Extraversion	0.18	< 0.001	-0.07	0.23
Neuroticism	-0.22	< 0.001	0.15	<0.01
Openness to experience	-0.08	0.10	0.11	0.04
Conscientiousness	-0.02	0.69	0.01	0.80
Agreeableness	-0.14	<0.01	0.11	0.04

In table 25 one can see that all the correlations are significant when wildlife value orientations is assessed as four dimensions. Personality traits is a predictor for the four wildlife value orientations ($p < 0.001$ and $p < 0.05$) but it explains only a small amount (0.09 and less) of these variables which is a minimal relationship. In the relationship between personality traits and appropriate use beliefs, neuroticism and agreeableness are significant influencers ($p < 0.001$). Neuroticism had a negative influence on appropriate use beliefs and agreeableness a positive one. For hunting beliefs, extraversion and neuroticism are the only significant influencers ($p <$ 0.001) where neuroticism again has a negative effect and extraversion a positive one.

Neuroticism is the only significant influencer ($p < 0.001$) of social affiliation in its relationship with personality traits and has a negative influence. Personality traits predicts only 3% (with a significance of 0.05) of caring beliefs and none of the five traits is a significant influencer.

Table 25. The relationship between personality traits and wildlife value orientations (four dimensions)

	Appropriate use beliefs		**Hunting beliefs**		**Social affiliation**		**Caring beliefs**	
	R^2 or β	**p**	**R^2 or β**	**p**	**R^2 or β**	**p**	**R^2 or β**	**p**
Personality traits	0.08 (R^2)	< 0.001	0.09 (R^2)	< 0.001	0.06 (R^2)	< 0.001	0.03 (R^2)	< 0.05
Extraversion	0.10	0.06	0.21	< 0.001	-0.09	0.01	-0.04	0.53
Neuroticism	-0.20	< 0.001	-0.15	< 0.001	0.15	< 0.001	0.13	0.02
Openness to experience	-0.12	0.03	-0.02	0.64	0.10	0.05	0.10	0.07
Conscientiousness	0.03	0.63	-0.06	0.27	0.03	0.58	-0.01	0.88
Agreeableness	0.15	< 0.001	-0.07	0.17	0.13	0.02	0.08	0.15

4.4.2 Personality traits and emotional dispositions

The correlation between personality traits and emotional dispositions is significant for valence towards wolf with $p < 0.05$ and towards deer with $p < 0.001$, see table 26. Just as with wildlife value orientations, the predictive power of personality traits is small, 3% for valence towards wolves and 6% for valence towards deer which is a minimal relationship. Openness to experience was the only significant ($p < 0.001$) influencer for both valence towards wolves (0.18) as towards deer (0.16) and has a positive influence on both.

The relationship between personality traits and discrete emotions towards deer showed significance as well, personality traits explain 8% of discrete emotions towards wolves. Again, openness to experience was the only significant trait, influencing discrete emotions in a positive way ($p < 0.005$). Personality traits also showed a significant influence on discrete emotions towards deer (0.07).

Table 26. The relationship between personality traits and emotional dispositions

	Valence wolf		**Valence deer**		**Discrete emotions wolf**		**Discrete emotions deer**	
Model	**R^2 or β**	**p**	**R^2 or β**	**p**	**R^2 or β**	**p**	**R^2 or β**	**p**
Personality traits	0.03 (R^2)	< 0.05	0.06 (R^2)	< 0.001	0.08 (R^2)	< 0.001	0.07 (R^2)	< 0.001
Extraversion	0.00	0.97	0.08	0.13	0.12	0.09	0.12	0.10
Neuroticism	0.01	0.92	0.09	0.10	-0.08	0.26	0.02	0.83
Openness to experience	0.18	< 0.001	0.16	< 0.001	0.21	<0.005	0.18	0.02
Conscientiousness	-0.04	0.50	0.03	0.63	-0.01	0.84	0.02	0.82
Agreeableness	0.04	0.51	0.14	0.01	0.02	0.83	0.12	0.11

4.4.3 Wildlife value orientations and acceptability of lethal control

When the relationship between wildlife value orientations, with the two dimensions of domination and mutualism, and lethal control is assessed, a significant influence can be found (table 27). The variance of the variable lethal control on wolves is for 28% explained by wildlife value orientations ($p <0.001$), which is around a typical relationship. There's a minimal relationship (0.16, $p < 0.001$) found for the variance wildlife value orientations explain in the acceptability of lethal forms of control on deer. Domination is the biggest influencer on lethal

control on wolves and on deer, being positive on both. Mutualism is a negative significant influencer in for lethal control on wolves ($p < 0.01$) but not for the acceptability of lethal control on deer.

Table 27. The relationship between wildlife value orientations (two dimensions) and the acceptability of lethal control

	Lethal control wolf		Lethal control deer	
Model	**R^2 or β**	**p**	**R^2 or β**	**p**
Wildlife value orientations	0.28 (R^2)	< 0.001	0.16 (R^2)	< 0.001
Domination	0.40	< 0.001	0.33	< 0.001
Mutualism	-0.19	<0.01	-0.11	0.15

The relationship between wildlife value orientations, with the four dimensions separately, and lethal control as attitudes and norms variable is significant ($p < 0.001$), see table 28. The effect size R of wildlife value orientations is stronger for lethal control on wolves, than for lethal control on deer. The relationship is typical for the wolf, where 36% of the variance is explained and minimal for deer, where the variance is explained for 19%. Appropriate use beliefs is the only significant predictor in both cases, with a positive influence ($p < 0.001$). The other three beliefs show no significant beta in the assessment of this relationship.

Table 28. The relationship between wildlife value orientations (four dimensions) and the acceptability of lethal control

	Lethal control wolf		Lethal control deer	
Model	**R^2 or β**	**p**	**R^2 or β**	**p**
Wildlife value orientations	0.37 (R^2)	< 0.001	0.19 (R^2)	< 0.001
Appropriate use beliefs	0.52	< 0.001	0.32	< 0.001
Hunting beliefs	0.01	0.84	0.07	0.35
Social affiliation	-0.08	0.35	-0.04	0.64
Caring beliefs	-0.06	0.47	-0.07	0.39

4.4.4 Emotional dispositions and the acceptability of lethal control

To assess the correlation between emotional dispositions and lethal control, valence and discrete emotions are used as a single variable, composed out of other variables because the items have shown internal consistencies (see paragraph 4.2). To measure the influence of each discrete emotion individually, the discrete emotions are also assessed as separate variables. All these results can be found in table 29.

Valence influences lethal control on wolves with -0.36 and with 0.26 lethal control on deer is assessed ($p < 0.001$). This is around a typical relationship in both cases. Valence is a negative influencer of the acceptability of lethal control on wolves and deer. The amount of variance explained by valence is 13% for wolves and 9% for deer.

When the influence of discrete emotions on the acceptability of lethal control is assessed as a single variable, there's a negative influence of 0.42 found for wolves and a negative influence of 0.30 for deer ($p < 0.001$). The variance of the acceptability of lethal control is for 17% explained for wolves and 9% for deer. For wolves, this relationship can be described as between substantial and typical, for deer the relationship is typical.

For lethal control on wolves, discrete emotions measured separately are a significant predictor ($p < 0.001$), with an R^2 of 0.21, which is between a minimal and typical relationship. The beta of joy and sadness indicate that these concepts both influence lethal control on wolves in a negative way. For disgust, the influence is negative ($p < 0.002$). For lethal control on deer, discrete emotions explain 0.13 of the variance ($p < 0.001$), which is a minimal relationship. Disgust was the only significant emotion with a significant beta that influences lethal control on wolves in a positive way.
The discrete emotion 'surprise' was not included in the assessment of the discrete emotion relationships, because, as explained in paragraph 4.2, it's not possible to define surprise as negative of positive.

Table 29. The relationship between emotional dispositions and the acceptability of lethal control

	Lethal control Wolf		**Lethal control Deer**	
Model	**R^2 or β**	**p**	**R^2 or B**	**p**
Valence	0.13 (R^2)	< 0.001	0.09 (R^2)	< 0.001
	-0.36	<0.001	0.26	<0.001
Discrete emotions	0.17 (R^2)	<0.001	0.09 (R^2)	< 0.001
	-0.42	<0.001	-0.30	<0.001
Discrete emotions (separate)	0.27 (R^2)	< 0.001	0.13 (R^2)	< 0.001
Joy	-0.26	< 0.002	-0.07	0.49
Fear	-0.04	0.59	-0.08	0.29
Anger	0.06	0.56	0.10	0.47
Disgust	0.28	< 0.005	0.22	0.07
Sadness	-0.15	<0.05	-0.04	0.69
Interest	-0.12	0.16	-0.14	0.13

4.4.5 Wildlife value orientations, emotional dispositions and the acceptability of lethal control

The relationships between wildlife value orientations and lethal control, and between emotional dispositions and lethal control is already assessed. However, the predictive power of wildlife value orientations and emotional dispositions combined, is still unclear. Table 30 and 31 show these relationships, where the concept of emotional dispositions is assessed as valence and discrete emotions.
In table 30, it becomes clear that the combined influence of wildlife value orientations and valence on the acceptability of lethal control on wolves 33% ($p < 0.001$). This relationship can be typified as a typical relationship. Domination has a significant positive influence and valence a significant negative influence. The R^2 change indicates that valence contributes 6% ($p < 0.001$) to wildlife value orientations in the predicting the acceptability of lethal control on wolves. Wildlife value orientations and discrete emotions explain the acceptability of lethal control for 40% ($p < 0.001$), which is between a typical and substantial relationship. Domination is again a significant negative influencer and discrete emotions are a significant positive influencer. Discrete emotions contribute 11% tot wildlife value orientations for explaining the variance in acceptability of lethal control on wolves.
Table 31 shows the acceptability of lethal control on deer. Wildlife value orientations and valence together explain 21% which is between a minimal and typical relationship. Valence

contributes 3% to wildlife value orientations ($p < 0.005$). When emotional dispositions are assessed as discrete emotions, again a relationship between minimal and typical is found (0.22, $p < 0.001$). Discrete emotions add 6% ($p < 0.001$) to wildlife value orientations when explaining the acceptability of lethal control on deer.

Table 30. Linear regression models predicting the acceptability of lethal control on wolves

Model	Acceptability of lethal control on wolves			
	R^2 or β	**p**	**R^2 change compared to WVOs only**	**p R^2 change**
Wildlife value orientations and Valence	0.33 (R^2)	< 0.001		
Domination	0.42	< 0.001		
Mutualism	-0.08	0.30		
Valence	-0.26	< 0.001	0.06	< 0.001
Wildlife value orientations and Discrete Emotions	0.40 (R^2)	< 0.001		
Domination	0.44	< 0.001		
Mutualism	-0.08	0.26		
Discrete Emotions	-0.34	< 0.001	0.11	< 0.001

Table 31. Linear regression models predicting the acceptability of lethal control on deer

Model	Acceptability of lethal control on deer			
	R^2 or β	**p**	**R^2 change compared to WVOs only**	**p R^2 change**
Wildlife value orientations and Valence	0.21 (R^2)	< 0.001		
Domination	0.35	< 0.001		
Mutualism	-0.05	0.52		
Valence	-0.19	< 0.001	0.03	< 0.005
Wildlife value orientations and Discrete Emotions	0.22 (R^2)	< 0.001		
Domination	0.32	< 0.001		
Mutualism	-0.07	0.85		
Discrete Emotions	-0.25	< 0.001	0.06	< 0.001

4.5 Conceptual framework

In paragraph 2.6 of the literature review, the conceptual framework of this thesis is presented. The strength of the four relationships presented in this framework is assessed in the previous paragraphs. In figure five the correlations of the conceptual are presented, for every correlation, the largest significant predicting value (R) is used. This results in that as variable for emotional dispositions, the discrete emotions on wolves is used. For lethal control, the acceptability of lethal control on wolves in combination to wildlife value orientations and emotional dispositions gave the strongest results, thus, this variable is used in the model.

It becomes clear that the strongest relationship between the four concepts is the one between wildlife value orientations and the acceptability of lethal control. Another strong relationship is

found between emotional dispositions and the acceptability of lethal control. The two other relationships are smaller and thus explain less of the variance of the dependent variable.

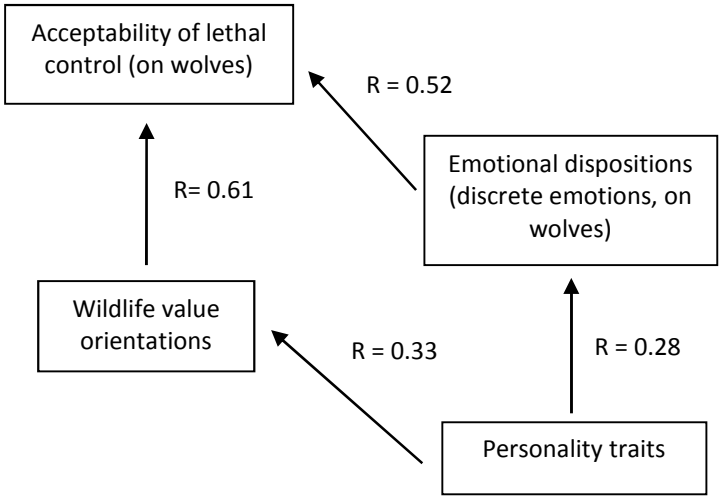

Figure 5. The correlations of the conceptual framework

CHAPTER 5
Discussion

5.1 Introduction

In this chapter the main findings of this research will be summarized and discussed. The findings will be deliberated in the light of the presented theories and concepts of the literature review and other comparable research. Furthermore, the aim of this thesis "*to combine cognitive and emotion related concepts of human dimensions of wildlife*" is assessed. To what extent the findings of this research might have been influenced by the chosen methods will be discussed in the last paragraph of this chapter.

5.2 Combining cognitive and emotion related concepts

As Manfredo (2008) states, "emotions are the ultimate cause of being attracted to wildlife". To study emotions in connection with cognitions could improve the understanding of human experience and behaviour with respect to wildlife (Jacobs, Vaske, Teel, & Manfredo, 2012). With this in mind, combining emotional and cognitive concepts seems to be a valuable addition to the research field of human dimensions of wildlife.

In this paragraph the four concepts of the conceptual framework will be deliberated in the light of what is already researched by other scholars. Findings of previous work and this study will be compared and discussed. Several theories and concepts were reviewed before formulating the research questions and the amount of research that was already done in the field of human dimensions of wildlife differed per concept.

The concept of personality traits was never researched before in this field. Personality traits is the least specific concept of the conceptual framework of this study. The mental hierarchy presented by Jacobs (2010) brought this concept into the research field of human dimensions of wildlife. This could be an explanation of why personality traits was never assessed before in this field. The results of the study of the five traits of personality show that the means are around the neutral point, which should be the case when a large sample is used (Costa & McCrae, 1992). Within this sample, people tended to be a little bit more emotional stable, extravert, conscientious, agreeable and open to experience. As been consistently reported by other scholars, women score higher on neuroticism than men (Costa, Terracciano, & McCrae, 2001), this significant difference is also found within this sample. The concept of personality traits gave new insight in how this concept with emotional aspects is related to a cognitive concept and another emotional concept. However, only a small relationship was found. This could be due to the fact that personality traits are at least partly inherited (Matthews, et al., 2009), which makes this concept differs from the three other concepts which are formed in life or are evoked at the moment.

Emotions in the context of human dimensions of wildlife weren't subject of a lot of studies. Emotional dispositions have been object of study, but most studies have only measured dispositional fear towards some species. Ohman, et al. (2001) assessed fear towards snakes and confirmed that evolutionary threatening stimuli like snakes are effective in capturing attention. Davey et al. (1998) measured fear towards fifty-one species in seven countries and found that animals fall into three categories: fear-irrelevant, fear-relevant and disgust-relevant. Other empirical studies on emotional dispositions towards animals are lacking. In this thesis, six emotions are used as emotional dispositions measurement towards the wolf and deer. For the wolf, joy, fear and surprise all showed negative means, though close to the neutral point. Anger, disgust and sadness were extremely negative, which indicates that these emotions are not associated with the wolf. Interest was the only positive emotion towards the wolf, which indicated that most people are interested in wolves. For deer the emotional disposition

measurement showed a different variance. Surprise is the only emotion around the neutral point, but still negative. Fear, anger, disgust, and sadness are strongly negative, which indicates that these emotions are not associated with deer. The means of joy and interest were both positive, which shows that people connect these emotions with deer. A significant difference was found between the five emotions (except for interest) felt for the wolf and deer. There was also a significant difference found between valence felt for both the wolf and for deer. In both cases valence was positive, but was stronger for deer. This indicates that people like both wolves and deer, but that deer evokes more positive feelings than the wolf. Surprisingly, the correlation found between the emotional dispositions (for both the discrete emotional measurement as the dimensional measurement) indicates that there's a strong relationship between the two wildlife species. People seem to respond emotionally the same way to wolves and deer. This finding could be an indication of the existence of general emotional dispositions towards wildlife. Differences were also found between how men and women experience emotions towards both wildlife species. The differences between emotions experienced by men and women were bigger for wolves, where joy, fear, anger, sadness and interest significantly differed for men and women. Men experienced more joy and interest, but less fear, anger and sadness. Men also experienced more valence towards wolves. These results show that men experience more positive emotions and less negative emotions towards wolves than women. The only difference in emotion felt towards deer was with the discrete emotion fear, where men experienced less fear than women. Fujita, Diener, & Sandvik (1991) found support in their study that people who experience strong positive emotions are also the people who experience strong negative emotions. This is opposite to what is found within these results, where men, who experience more positive emotions, experience less negative emotions. Gender differences were also found in other studies (Fischer, Rodriguez Mosquera, van Vianen, & Manstead, 2004; Simon & Nath, 2004), but these previous findings didn't give more insight into the gender differences in the emotional dispositions towards wolves. In general, the results of the emotional dispositions indicate that wildlife evokes not only fear, but a lot of emotions. This underlines the statement of Jacobs, et al. (2012) that research on emotion in the field of human dimensions could improve the understanding of human behaviour.

In contrary to the previously discussed concepts, the two other concepts of the conceptual framework were repeatedly assessed in connection to human dimensions of wildlife. Wildlife value orientations, as a cognitive concept, is specifically created for the field of human dimensions of wildlife and was therefore frequently the object of study. These value orientations are assumed to play an important role in explaining individual variation in wildlife-related behaviours and attitudes toward issues dealing with wildlife (Teel & Manfredo, 2010). Vaske, et al. (2011) found that wildlife value orientations are evident in the Netherlands and that women are more mutualism-oriented. The results of this thesis are in line with these findings. An additional finding is that men are significantly more dominant-oriented than women. Already confirmed was that wildlife value orientations explain up to fifty per cent of the acceptance of management actions (Vaske, et al., 2011). In this study, the predictive power of wildlife value orientations is again confirmed.

A lot of research has been done on attitudes and norms in the field of human dimensions of wildlife. Kellert & Berry (1987) did research on attitudes towards wildlife related to gender and Campbell & Fehres (2010) showed in their research that attitudes and norms have predictive power for the intention to remove bear attractants. An explanation for the extensive amount of research on attitudes and norms towards wildlife could be that these concepts are specific and are close to explaining actual behaviour. Besides that, because attitudes are more transitional in nature than other concepts, management strategies like education and raising awareness can have a positive effect. The results of attitude studies are thus often directly applicable for

managers, which could explain the popularity of these kinds of studies. In this thesis the acceptability of lethal control served as the variable for attitudes and norms. Bruskotter et al. (2009) investigated the nature of attitudes towards lethal control on wolves in Utah and found that non-lethal methods of control were more acceptable than lethal forms of control. Vaske & Taylor (2006) found that the nature of attitudes towards lethal control methods is highly controversial and is in relation to the severity of the human-wolf interaction. Subsequent to these results, in this study is established that the acceptability of lethal control is extremely low. Even though lethal forms of control on deer were less accepted than lethal forms of control on wolves, it was found unacceptable for both wildlife species.
When looking at the results of the emotional dispositions and the relationships between emotional dispositions and the acceptability of lethal control, the wolf seems to elicit stronger emotions than deer. This was the same for the relationship between wildlife value orientations and the acceptability of lethal control, values seem to be become more important when the subject is a wolf. As stated by Bruskotter et al. (2009) lethal control on mega fauna species is highly controversial, but it seems that for some species it's more controversial than for others. Fox & Bekoff (2011) state that people can see the wolf as an "icon of lost wilderness" and that their return symbolizes the return of wild nature and the integrity of healthy ecosystems. This could explain why people react stronger to lethal control on wolves than on deer.
In this study, two relatively unexplored concepts were introduced into the research field of human dimensions of wildlife and they both brought new insights into the relationships between several concepts. The two other concepts, which were repeatedly explored in this research field, showed comparable general results and contributed into insights about how different concepts correlate with each other.

5.3 Reflection on methods

In paragraph 3.8 the limitations of quantitative methods were reviewed and in this paragraph will be discussed what some of these limitations meant for this research in specific. Quantitative methods are known for being inflexible. This may be the reason why the scale of arousal (dimensional emotional dispositions measurement) of this study was not reliable. It could be that if respondents had the chance to explain their feelings of arousal better, and were not stuck with the already set scale, the results would be different. This is a typical flaw of quantitative methods, the scales need to reflect the view of respondents very precise, otherwise the chance of scales not being reliable increases. Some respondents wrote explanations of their answers in the questionnaire, extra information that couldn't be taken into account. It's almost impossible to prevent this and as long as respondents are still able to relate to the questions and fill them in, this shouldn't have to be a problem.
Another limitation mentioned in 3.8 is that questionnaires can seem artificial to respondents. The questionnaire used in this study contained the three hypothetical situations of the attitudes and norms measurement. Especially in the case of the wolf, the situations were purely hypothetical because when the respondents filled in the questionnaire, this situation weren't occurring in the Netherlands. This could be an explanation for the differences with the research of Vaske & Taylor (2006) where lethal control became acceptable when the severity of the human-wolf interaction increased. These kinds of situations didn't occur in the Netherlands for a long time, which could make it hard for people to relate to and this could explain the differences in response.
In the measurement instrument of wildlife value orientations, there's one item with a double question in it. However, when looking at the results of the reliability test, the mean and standard deviation of this particular item is comparable to the other items with its scale. Besides

that, the Cronbach's Alpha if item deleted indicates that this item contributes as much to the scale as the other items do.
Although every research method has its limitations, the methods used in this thesis fit the aim of the research, which was to examine the predictive power of concepts.

CHAPTER 6
Conclusion

6.1 Introduction
In this chapter the conclusions of this research will be discussed. In line with the presented conceptual framework, the research questions were stated at the end of chapter two. The research questions are:

1. To what extent do personality traits have predictive power for wildlife value orientations?
2. To what extent do personality traits have predictive power for emotional dispositions toward wildlife?
3. To what extent do wildlife value orientations have predictive power for the acceptability of management strategies for wildlife?
4. To what extent do emotional dispositions towards wildlife have predictive power for the acceptability of management strategies for wildlife?
5. To what extent do emotional dispositions have an added value to wildlife value orientations in explaining the acceptability of management strategies for wildlife?

The following paragraphs will each handle one research question and paragraph 6.7 will present the conceptual model. In addition, recommendations for further research, as well as consequences for management and policy, will be discussed in the last paragraph of this chapter.

6.2 Personality traits and wildlife value orientations
In this paragraph the first research question will be answered. This research question combines personality traits and wildlife value orientations (a cognitive concept). Both concepts are low in the mental hierarchy which indicates that these concepts normally don't explain much of the variance in specific behaviour and that they transcend situations. As presented in the results of chapter four, the extent to which personality traits have predictive power for wildlife value orientations is minimal. Personality traits explain maximum 11% of wildlife value orientations; this is the influence of personality traits on domination. The small relationship between personality traits and wildlife value orientations could be due to the difference between nature and nurture. As stated in the discussion, wildlife value orientations are assumed to be an expression of a general ideology or attitude. In contrary to personality traits, which are at least partly inherited, wildlife value orientations are shaped during life. It could be this fundamental difference between the concepts that explains why there's only a small relationship found.

6.3 Personality traits and emotional dispositions
The second research question will be answered in this paragraph; both concepts in this research question are from the emotional side of the mental hierarchy. Personality traits is lower in the hierarchy than emotional dispositions, which indicates that emotional dispositions are more specific to situations and faster to change. Valence and discrete emotions were used as the emotional dispositions measurement, measured towards deer and the wolf.
The extent of the predictive power of personality traits for emotional dispositions is minimal for valence towards both wildlife species. Personality traits explains 3% of the valence towards the wolf and 6% of the valence towards deer.
For discrete emotions the predictive power of personality traits was a bit higher (8% for wolves and 7% for deer) which is still only a minimal relationship. The small relationship between these two emotional concepts was unexpected. This result though, could be due to a number of factors. Because of the absence of a reliable scale for arousal and discrete emotions, it wasn't

possible to get a complete understanding of the complex concept of emotional dispositions. It could also be that personality traits isn't the right concept to be placed as least specific concept of the emotional part of the mental hierarchy and that that explains why the results show no relationship.

6.4 Wildlife value orientations and the acceptability of lethal control

The third research question contains two cognitive concepts. From the two concepts, the acceptability of lethal control is most specific concept. This concept was created to measure attitude and norms. The influence of wildlife value orientations on attitude and norms was deliberated in two ways; (1) wildlife value orientations seen as a concept with the two variables of domination and mutualism, and (2) as a concept with the four variables of appropriate use beliefs, hunting beliefs, social affiliation and caring beliefs. Both methods were applied to the acceptability of lethal control on the wolf and on deer. The first method showed that the extent to which wildlife value orientations influences attitudes and norms is 28% for the wolf and 16% for deer. Domination has a positive influence on lethal control for both wolves and deer and mutualism has a negative influence on the acceptability of lethal control on wolves but didn't show a significant influence on the acceptability of lethal control on deer. The influence of domination and mutualism means that the more a person views wildlife from a dominant perspective where humans are prioritized over wildlife and wildlife should be managed for human benefit, the more this person finds lethal control on both species more acceptable. On the other hand, the more a person sees wildlife as a part of an extended family and assigns it with rights, the less acceptable it finds lethal control.

The second method showed an extent of influence of 37% for wolf and 19% for deer. Appropriate use beliefs has a positive effect on lethal control in both cases. This implies that when an individual scores high on appropriate use beliefs (which indicates that a person finds that wildlife is primarily on earth for people to use), he/she is more likely to accept the management action of lethal control on both wolves and deer. The other dimensions of wildlife value orientations didn't show significant influence.

It's interesting that wildlife value orientations have more influence when assessed as four dimensions than when assessed as two dimensions. An explanation for this finding could be that the separate belief dimensions all explain variance in a different way, which is reduced when there are only two dimensions are assessed.

The results indicate a relationship between the two cognitive concepts, which is in line with the cognitive hierarchy and the theory behind wildlife value orientations.

6.5 Emotional dispositions and the acceptability of lethal control

As with the first research question, the research question answered in this paragraph contains one emotional concept (emotional dispositions) and one cognitive concept (the acceptability of lethal control). Emotional dispositions were measured in two ways; from the dimensional and discrete perspective. The extent to which valence influences the acceptability of lethal control was greater for the wolf (-0.36) than for deer (-0.26). These results indicate than when a person has the disposition to like a certain species of wildlife, lethal control on that specific animal was less accepted.

Results indicate that discrete emotions explain 17% for wolves and 9% for deer. Emotions have a negative effect on the acceptability of lethal control on both wildlife species. This indicates that when a person feel joy or interest when thinking about either wolves or deer, or when a person doesn't experience fear, anger, sadness and disgust, that person thinks it is not acceptable to use lethal forms of control. When the discrete emotions are assessed separately, the total predictive power becomes 27% for wolves and 13% for deer. For the acceptability of

lethal control on wolves, joy and sadness showed a negative influence. These results are somewhat unexpected because it indicates that when a person experiences sadness towards wolves, he/she finds lethal forms of control less acceptable. Although sadness is a negative emotion, it lowers the acceptability of lethal control on wolves. An explanation for this result could be that if people find the wolf sad, they feel this sadness themselves and are therefore against lethal forms of control. Disgust showed a positive influence, which indicates that when a person experiences disgust when thinking about wolves, he/she is more accepting towards lethal control.
These results suggest a relationship between an emotional concept and a cognitive concept.

6.6 The combined value of wildlife value orientations and emotional dispositions

The previous paragraphs have shown that there are relationships between emotional and cognitive concepts. The results also indicate that cognitive concepts have predictive power of emotional concepts, and the other way around. What is not clear yet, is if emotional concepts have an added value to cognitive concepts. To answer this question, the added value of emotional dispositions to wildlife value orientation for the acceptability of lethal control, was measured. Emotional dispositions is again assessed as valence and discrete emotions.
Results shown that together the two concepts explain 33% of the acceptability of lethal control on wolves and 21% of that on deer when emotional dispositions is assessed as valence. The added of valence is 6% for wolves and 3% for deer. When discrete emotions are used to assess emotional dispositions, the two concepts together explain 40% of the acceptability of lethal control on wolves and 22% of that on deer. The added value of discrete emotions is 11% for wolves and 6% for deer. These findings indicate that emotional dispositions have an added value on top of wildlife value orientations and thus can be useful in explaining attitudes and norms.

6.7 Conceptual framework

The conceptual framework as presented in paragraph 4.5 indicates the two strongest relationships are between emotional dispositions and the acceptability of lethal control, and between wildlife value orientations and the acceptability of lethal control. The other two relationships are smaller, but still show predictive power. Figure six shows the effect on the conceptual framework, from the legend it becomes evident which are the two substantial relationships and which are the relationships that are typical. With these results, the value of the cognitive hierarchy is again confirmed and a part of the mental hierarchy is proven because there are strong relationships found between cognitive and emotional concepts. From the results it also seems that the place in the conceptual framework dictates the extent of the relationship, the least specific concepts, show the smallest relationships.
It's remarkable that the two concepts of wildlife value orientations and emotional dispositions show more predictive power when they're applied to the acceptability of lethal control on wolves than on deer. It seems that the wolf elicits stronger emotions and that specific values become more important.
Another remarkable finding is that discrete emotions seem to explain of the variance than valence. Discrete emotions consistently show more predictive power, whether the concept was applied to wolves or deer, that didn't seem to matter. This finding could be due to the fact that valence is only one dimension of emotion; it captures only the liking-disliking dimension. Discrete emotions on the other hand, capture a broader spectrum where the different emotions are more specified and can therefore maybe explain more variance.

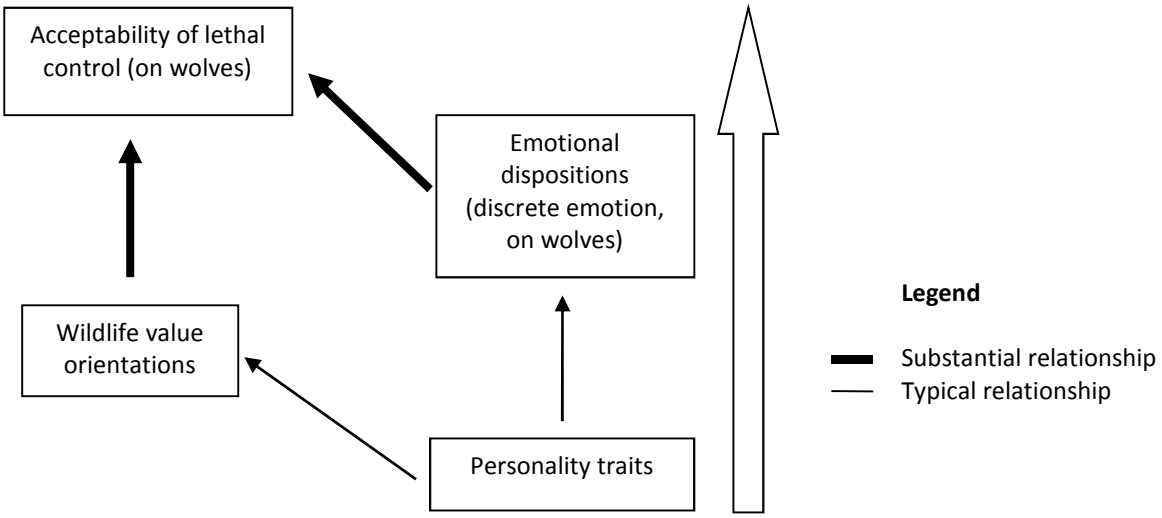

Figure 6. The relationships of the conceptual framework

6.8 Recommendations

The conclusions presented in this chapter have implications for researchers and managers interested in the origins of wildlife conflicts.

To start with, there's still a lot of data within the database of this study, that isn't analysed yet. Two recommendations for further analysis of the database are: (1) examine the relationships between the five management strategies (2) finding out what the effect is of combining wildlife value orientations and emotional dispositions as predictive concepts for other management strategies

In case of further research, to examine the relationship between demographics, management strategies, emotions and maybe even behavioural intention, one needs to do a study that reflects the population of the Netherlands. Similar studies are done in the Netherlands, but the component of emotions and behavioural intention was never included. Even though that for these kinds of studies a lot of time and money needs to be spent, the results can give insight in how emotions regulate intentions and can be directly be applied to the field. It's essential that managers see the importance of the social acceptability of wildlife management actions and how this is related to emotions and values. Defining completely practical applications of the results of this study is hard, because with the sample used in this study, one cannot draw conclusions that reflect the population of the Netherlands. Besides that, in this thesis, only relationships between concepts are assessed, behavioural intention for instance (which is the concept closest to actual behaviour), isn't measured, which makes it hard to make assumptions that are directly applicable for managers in the field of nature/wildlife conservation. What is possible to state is that emotions and values play a bigger part when management strategies for wolves are discussed than we they are discussed for deer. This indicates that managing wolf populations is a sensitive case and needs to be handled with care.

The mental hierarchy can also be the subject of further analysis. Four of the eight concepts are assessed in this thesis which is only half of the concepts included in the hierarchy. The cognitive part of the mental hierarchy is more established than the emotional part. Recommended would be to investigate the relationships between the emotional concepts, especially the relationship between personality traits and the other emotional concepts, to determine if personality has the right place within the mental hierarchy. Subsequently, the results of this study indicate the existence of general emotional dispositions towards wildlife, something worthwhile to investigate.

But what does this mean for the first wolf in the Netherlands? As mentioned in the introduction, the first wolf since 1897 was spotted on in September of 2011. It is definitely possible to state that a lot of emotions and values are involved when different management actions for wolves are discussed. If wolves are going to be part of the Dutch ecosystem, they should work on their positive image, because when they evoke joy or are liked by people, management actions as lethal control are found less acceptable. And even though this research cannot actually state anything about the opinions of the Dutch population, results do indicate that the management action of lethal control in general is extremely unpopular, which might mean that there's a future for wolves in the Netherlands.

Literature

Barrett, L. (2004). Feelings or Words? Understanding the Content in Self-Report Ratings of Experienced Emotion. *Journal of Personality and Social Psychology, 87*(2), 266-281.

Barrett, L., Mesquita, B., Ochsner, K., & Gross, J. (2007). The experience of emotion. [Review]. *Annual Review of Psychology, 58*, 373-403.

Barrett, L., & Russell, A. (1999). The structure of current affect: Controversies and emerging consensus. [Proceedings Paper]. *Current Directions in Psychological Science, 8*(1), 10-14.

Blythe, M., Overbeeke, K., Monk, A., Wright, P., & Desmet, P. (2005). Measuring Emotion: Development and Application of an Instrument to Measure Emotional Responses to Products *Funology* (Vol. 3, pp. 111-123): Springer Netherlands.

Bradley, M. M., & Lang, P. J. (1994). Measuring emotion: The self-assessment manikin and the semantic differential. *Journal of Behavior Therapy and Experimental Psychiatry, 25*(1), 49-59.

Bright, A. D., Manfredo, M. J., & Fulton, D. C. (2000). Segmenting the public: An application of value orientations to wildlife planning in Colorado. *Wildlife Society Bulletin, 28*(1), 218-226.

Bruskotter, J. T., Vaske, J. J., & Schmidt, R. H. (2009). Social and Cognitive Correlates of Utah Residents' Acceptance of the Lethal Control of Wolves. *Human Dimensions of Wildlife, 14*(2), 119-132.

Campbell, M., & Fehres, P. (2010). *Changing Behavior in Cottage Country: understanding cottagers intentions.* Paper presented at the Pathways to succes: Integrating human dimensions into fisheries and wildlife management, Estes Park, Colorado.

Costa, P., Jr., Terracciano, A., & McCrae, R. R. (2001). Gender differences in personality traits across cultures: Robust and surprising findings. *Journal of Personality and Social Psychology, 81*(2), 322-331.

Costa, P., & McCrae, R. (1992). *Revised NEO Personality Inventory (NEO-PI-R) and NEO Five-Factor Inventory (NEO-FFI) manual*: Psychological Assessment Resources, Inc.

Damasio, A. (2003). *Looking for Spinoza: Joy, Sorrow and the Feeling Brain*. United States of America: Harcourt Books.

Davey, G. C. L., McDonald, A. S., Hirisave, U., Prabhu, G. G., Iwawaki, S., Jim, C. I., et al. (1998). A cross-cultural study of animal fears. *Behaviour Research and Therapy, 36*(7-8), 735-750.

Denissen, J. J. A., Geenen, R., Van Aken, M. A. G., Gosling, S. D., & Potter, J. (2008). Development and validation of a Dutch translation of the Big Five Inventory (BFI). [Article]. *Journal of Personality Assessment, 90*(2), 152-157.

Ekman, P., Friesen, W. V., Ellsworth, P. (1972). *Emotion in the human face: Guidelines for research and an integration of findings*. Oxford, England: Pergamon Press.

Evans, D. (2001). *Emotie*. Rotterdam, The Netherlands: Lemniscaat.

Feldman Barrett, L., & Russell, J. A. (1998). Independence and bipolarity in the structure of current affect. *Journal of Personality and Social Psychology, 74*(4), 967-984.

Fischer, A. H., Rodriguez Mosquera, P. M., van Vianen, A. E. M., & Manstead, A. S. R. (2004). Gender and Culture Differences in Emotion. *Emotion, 4*(1), 87-94.

Fox, C. H., & Bekoff, M. (2011). Integrating Values and Ethics into Wildlife Policy and Management—Lessons from North America. *Animals, 1*(1), 126-143.

Frijda, N. H. (2005). Emotion experience. *Cognition & Emotion, 19*(4), 473-497.

Frijda, N. H. (1994). Varieties of affect: Emotions and episodes, moods, and sentiments *The nature of emotions: Fundamental questions* (pp. 197 - 202): Oxford University Press.

Fujita, F., Diener, E., & Sandvik, E. (1991). Gender differences in negative affect and well-being: The case for emotional intensity. *Journal of Personality and Social Psychology, 61*(3), 427-434.

Fulton, D. C., Manfredo, M. J., & Lipscomb, J. (1996). Wildlife value orientations: A conceptual and measurement approach. *Human dimensions of wildlife, 1*(2), 24-47.

Gosling, S. D., Rentfrow, P. J., & Swann, W. B. (2003). A very brief measure of the Big-Five personality domains. *Journal of Research in Personality, 37*(6), 504-528.

Gray, E. K. & Watson, D. (2001). Emotion, mood, and temperament: Similarities, differences--and a synthesis. *Emotions at work*. Ed. R. L. Payne & C. L. Cooper. New York: Wiley.

Gray, E., K., & Watson, D. (2007). Assessing positive and negative affect via self-report. In J. Coan & J. Allen (Eds.), *Handbook of Emotion Elicitation and Assessment* New York: Oxford University Press.

Izard, C. E. (2007). Basic Emotions, Natural Kinds, Emotion Schemas, and a New Paradigm. *Perspectives on Psychological Science, 2*(3), 260-280.

Izard, C. E., Libero, D. Z., Putnam, P., & Haynes, O. M. (1993). Stability of emotion experiences and their relations to traits of personality. *Journal of Personality and Social Psychology, 64*(5), 847-860.

Jacobs, M.H. (2006) *The production of mindscapes: a comprehensive theory of landscape experience.* PhD Thesis published at Wageningen University.

Jacbos, M. H., & Vaske, J. J. (2010). *Integrating cognitive and affective human dimensions research:The Mental Hierarchy.* Paper presented at the Pathways to succes: Integrating human dimensions into fisheries and wildlife management, Estes Park, Colorado.

Jacobs, M. H., Vaske, J. J., Teel, T. L., & Manfredo, M. J. (2012). Human dimensions of Wildlife. *In Press*.

Jacobs, M. (2006). *The production of mindscapes : a comprehensive theory of landscape experience.* Unpublished Met lit. opg. - Met samenvatting in het Nederlands, Proefschrift Wageningen, s.n.], [S.l.

Jacobs, M. H. (2007). Wildlife Value Orientations in the Netherlands. *Human Dimensions of Wildlife: An International Journal, 12*(5), 359 - 365.

Jacobs, M. H.(2009). Why Do We Like or Dislike Animals? *Human Dimensions of Wildlife: An International Journal, 14*(1), 1 - 11.

Kellert, S. R., & Berry, J. K. (1987). Attitudes, Knowledge, and Behaviors toward Wildlife as Affected by Gender. *Wildlife Society Bulletin, 15*(3), 363-371.

Leventhal, H., & Scherer, K. (1987). The Relationship of Emotion to Cognition: A Functional Approach to a Semantic Controversy. *Cognition & Emotion, 1*(1), 3 -28.

Manfredo, M. J. (2008). *Who cares about wildlife? Social science concepts for exploring human-wildlife relationships and conservation issues*. Fort Collins, Colorado, USA: Springer Science + Business Media, LLC.

Manfredo, M. J., Teel, T. L., & Henry, K. L. (2009). Linking Society and Environment: A Multilevel Model of Shifting Wildlife Value Orientations in the Western United States*. *Social Science Quarterly, 90*(2), 407-427.

Matthews, G., Deary, I., & Whiteman, M. (2009). *Personality Traits*: Cambridge University Press.

Matthews, G., Jones, D., & Chamberlain, A. (1990). Refining the measurement of mood: The UWIST Mood Adjective Checklist. *British Journal os Psychology, 81*, 17-42.

Mauss, I., & Robinson, M. (2009). Measures of emotion: A review. [Review]. *Cognition & Emotion, 23*(2), 209-237.

Nu.nl. (2011, 02-09-2011). Vrijwel zeker wolf in Nederland gezien Retrieved 03-09-2011, from http://www.nujij.nl/wetenschap/vrijwel-zeker-wolf-in-nederland-gezien.13568085.lynkx#axzz1ZEuEr5mR

Ohman, A., Flykt, A., & Esteves, F. (2001). Emotion drives attention: Detecting the snake in the grass. *Journal of Experimental Psychology: General, 130*(3), 466-478.

Ortony, A., Clore, G., & Collins, A. (1990). *The cognitive structure of emotions*: Cambridge University Press.

Poels, K. & DeWitte, S. (2006) How to capture the heart? reviewing 20 years of emotions measurement in advertising. *Journal of Advertising Research,* 46 (1): 18-37

Raadik, J., & Cottrell, S. (2007). Wildlife Value Orientations: An Estonian Case Study. *Human Dimensions of Wildlife, 12*(5), 347-357.

Rottenberg, J. (2005). Mood and Emotion in Major Depression. *Current Directions in Psychological Science, 14*(3), 167-170.

Russell, J. A., & Barrett, L. F. (1999). Core affect, prototypical emotional episodes, and other things called Emotion: Dissecting the elephant. [Review]. *Journal of Personality and Social Psychology, 76*(5), 805-819.

Russell, J. A., Weiss, A., & Mendelsohn, G. A. (1989). Affect Grid: A single-item scale of pleasure and arousal. *Journal of Personality and Social Psychology, 57*(3), 493-502.

Russell, L. (2003). Decoding equine emotions. *Society and Animals, 13*(3), 265-266.

Scherer, K. (2005). What are emotions? And how can the be measured? *Social Science Information, 44*(4), 695-729.

Simon, Robin W., & Nath, Leda E. (2004). Gender and Emotion in the United States: Do Men and Women Differ in Self-Reports of Feelings and Expressive Behavior? *American Journal of Sociology, 109*(5), 1137-1176.

Stein, N. L., & Hernandez, M. W. (2007). Asessing Understanding and Appraisals During Emotional Experience. In J. Coan & J. Allen (Eds.), *Handbook of Emotion Elicitation and Assessment* New York: Oxford University Press.

Stout, G. F. (1924). *A Manual Of Psychology*. London: University Correspondence College Press.

Teel, T. L., & Manfredo, M. J. (2010). Understanding the diversity of public interests in wildlife conservation. *Conservation Biology, 24*(1), 128-139.

Ulrich, R. (1993). Biophilia, biophobia and natural landscapes. In E. W. Stephen Kellert (Ed.), *The biophilia hypothesis*. Washington, DC: Hunter's World.

Vaske, J. J., Jacobs, M., & Sijtsma, M. (2011). Wildlife value orientations and demographics in The Netherlands. *European Journal of Wildlife Research*, 1-9.

Vaske, J. J. (2008). *Survey research and analysis: applications in parks, recreation and human dimensions*. State College, Pa.: Venture Publishing.

Vaske, J. J., & Taylor, J. G. (2006). *Visitor and Resident Acceptability Norms towards Wolf Management Actions.* Paper presented at the Third International Conference on Monitoring and Management of Visitor Flows in Recreational and Protected Areas, Rapperswil, Switzerland.

Vining, J. (2003). The connection to other animals and caring for nature. *Human Ecology Review, 10*(2).

Zinn, H. C., & Shen, X. S. (2007). Wildlife Value Orientations in China. *Human Dimensions of Wildlife, 12*(5), 331-338.

Appendix

The questionnaire “Your view on wildlife”.

WAGENINGEN UNIVERSITY
WAGENINGEN UR

Your view on wildlife

This survey examines how people view wildlife.
Wildlife is considered as ‘animals who are living freely in the wild’.

The survey contains five parts (A - E) and takes about 20 minutes to complete.
To ensure a result as complete as possible, it’s important that you answer all the questions.

If you participate in this survey you help me finish my thesis.

Thank you,
Piera Fehres

A. Below are statements that represent a variety of ways people feel about fish and wildlife and the natural environment. Please indicate the extent to which you disagree or agree with each statement. *Please circle one number for each statement.*

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
1. Humans should manage fish and wildlife populations so that humans benefit.	1	2	3	4	5	6	7
2. The needs of humans should take priority over fish and wildlife protection.	1	2	3	4	5	6	7
3. It is acceptable for people to kill wildlife if they think it poses a threat to their life.	1	2	3	4	5	6	7
4. It is acceptable for people to kill wildlife if they think it poses a threat to their property.	1	2	3	4	5	6	7
5. It is acceptable to use fish and wildlife in research even if it may harm or kill some animals.	1	2	3	4	5	6	7
6. Fish and wildlife are on earth primarily for people to use.	1	2	3	4	5	6	7
7. We should strive for a world where there's an abundance of fish and wildlife for hunting and fishing.	1	2	3	4	5	6	7
8. Hunting is cruel and inhumane to the animals.	1	2	3	4	5	6	7
9. Hunting does not respect the lives of animals.	1	2	3	4	5	6	7

	Strongly Disagree	Moderately Disagree	Slightly Disagree	Neither	Slightly Agree	Moderately Agree	Strongly Agree
10. People who want to hunt should be provided the opportunity to do so.	1	2	3	4	5	6	7
11. We should strive for a world where humans and fish and wildlife can live side by side without fear.	1	2	3	4	5	6	7
12. I view all living things as part of one big family.	1	2	3	4	5	6	7
13. Animals should have rights similar to the rights of humans.	1	2	3	4	5	6	7
14. Wildlife are like my family and I want to protect them.	1	2	3	4	5	6	7
15. I care about animals as much as I do other people.	1	2	3	4	5	6	7
16. It would be more rewarding to me to help animals rather than people.	1	2	3	4	5	6	7
17. I take great comfort in the relationships I have with animals.	1	2	3	4	5	6	7
18. I feel a strong emotional bond with animals.	1	2	3	4	5	6	7
19. I value the sense of companionship I receive from animals.	1	2	3	4	5	6	7

B. This part of this survey contains questions about wildlife-human situations that can happen in the Netherlands <u>now or in the future</u>. For every situations there are five different management actions possible.

Below you will find three different situations involving <u>wolves</u>. Please rate the acceptability of each management action that may be used to address the situation. *Please circle one number for each management action.*

SITUATION 1							
A pack of wolves lives in a large nature area. There's a chance that hikers see them.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the wolves	1	2	3	4	5	6	7
5. Destroy the wolves	1	2	3	4	5	6	7

SITUATION 2							
Wolves living in a large nature area have attacked several lambs on a nearby farm.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the wolves	1	2	3	4	5	6	7
5. Destroy the wolves	1	2	3	4	5	6	7

SITUATION 3							
Wolves living in a large nature area have attacked and killed a hiker.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the wolves	1	2	3	4	5	6	7
5. Destroy the wolves	1	2	3	4	5	6	7

Below you will find three different situations involving deer. Please rate the acceptability of each management action that may be used to address the situation. *Please circle one number for each management action.*

SITUATION 1							
A population of deer lives in a large nature area. There is a chance that hikers see them.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the deer	1	2	3	4	5	6	7
5. Destroy the deer	1	2	3	4	5	6	7

SITUATION 2							
Deer living in a large nature area have destroyed or eaten crops on a nearby farm.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the deer	1	2	3	4	5	6	7
5. Destroy the deer	1	2	3	4	5	6	7

SITUATION 3							
Deer living in a large nature area have caused a car accident on a road crossing the area. One person did not survive.							
How unacceptable or acceptable is it if wildlife agencies:	**Very unacceptable**			**Neutral**			**Very acceptable**
1. Do nothing	1	2	3	4	5	6	7
2. Monitor the situation	1	2	3	4	5	6	7
3. Educate the public	1	2	3	4	5	6	7
4. Capture and relocate the deer	1	2	3	4	5	6	7
5. Destroy the deer	1	2	3	4	5	6	7

C. Seven emotions are listed below. For each emotion please indicate the extent to which the <u>wolf</u> evokes this emotion in you. *Please circle one number for each emotion.*

	Not at all						**Very strong**
1. Joy	0	1	2	3	4	5	6
2. Fear	0	1	2	3	4	5	6
3. Surprise	0	1	2	3	4	5	6
4. Anger	0	1	2	3	4	5	6
5. Disgust	0	1	2	3	4	5	6
6. Sadness	0	1	2	3	4	5	6
7. Interest	0	1	2	3	4	5	6

For each statement below, please indicate your feelings when you think about the <u>wolf</u>.
Please circle one number for each statement.

1. Don't like	1	2	3	4	5	6	7	**Like**
2. Passive	1	2	3	4	5	6	7	**Active**
3. Unpleasant	1	2	3	4	5	6	7	**Pleasant**
4. Relaxation	1	2	3	4	5	6	7	**Tension**
5. Negative	1	2	3	4	5	6	7	**Positive**
6. Without energy	1	2	3	4	5	6	7	**Energetic**
7. Not enjoyable	1	2	3	4	5	6	7	**Enjoyable**
8. Not calm	1	2	3	4	5	6	7	**Calm**

Seven emotions are listed below. For each emotion please indicate the exttent to which <u>deer</u> evokes this emotion in you. *Please circle one number for each emotion.*

	Not at all						**Very strong**
1. Joy	0	1	2	3	4	5	6
2. Fear	0	1	2	3	4	5	6
3. Surprise	0	1	2	3	4	5	6
4. Anger	0	1	2	3	4	5	6
5. Disgust	0	1	2	3	4	5	6
6. Sadness	0	1	2	3	4	5	6
7. Interest	0	1	2	3	4	5	6

For each statement below, please indicate your feelings when you think about <u>deer</u>.
Please circle one number for each statement.

1. Don't like	1	2	3	4	5	6	7	**Like**
2. Passive	1	2	3	4	5	6	7	**Active**
3. Unpleasant	1	2	3	4	5	6	7	**Pleasant**
4. Relaxation	1	2	3	4	5	6	7	**Tension**
5. Negative	1	2	3	4	5	6	7	**Positive**
6. Without energy	1	2	3	4	5	6	7	**Energetic**
7. Not enjoyable	1	2	3	4	5	6	7	**Enjoyable**
8. Not calm	1	2	3	4	5	6	7	**Calm**

D. The following statements describe different charateristics of people. To what extent do you agree or disagree with each statement. *Please circle one number for each statement.*

I see myself as someone who:	Strongly disagree	Slightly disagree	Neutral	Slightly agree	Strongly agree
1. **Is talkative**	1	2	3	4	5
2. **Tends to find fault with others**	1	2	3	4	5
3. **Does a thorough job**	1	2	3	4	5
4. **Is depressed, blue**	1	2	3	4	5
5. **Is original, comes up with new ideas**	1	2	3	4	5
6. **Is reserved**	1	2	3	4	5
7. **Is helpful and unselfish with others**	1	2	3	4	5
8. **Can be somewhat careless**	1	2	3	4	5
9. **Is relaxed, handles stress well**	1	2	3	4	5
10. **Is curious about many different things**	1	2	3	4	5
11. **Is full of energy**	1	2	3	4	5
12. **Starts quarrels with others**	1	2	3	4	5
13. **Is a reliable worker**	1	2	3	4	5
14. **Can be tense**	1	2	3	4	5
15. **Is ingenious, a deep thinker**	1	2	3	4	5
16. **Generates a lot of enthusiasm**	1	2	3	4	5
17. **Has a forgiving nature**	1	2	3	4	5
18. **Tends to be disorganized**	1	2	3	4	5
19. **Worries a lot**	1	2	3	4	5
20. **Has an active imagination**	1	2	3	4	5
21. **Tends to be quiet**	1	2	3	4	5
22. **Is generally trusting**	1	2	3	4	5
23. **Tends to be lazy**	1	2	3	4	5
24. **Is emotionally stable, not easily upset**	1	2	3	4	5

	Mee oneens	Een beetje mee oneens	Neutraal	Een beetje mee eens	Mee eens
25. **Is inventive**	1	2	3	4	5
26. **Has an assertive personality**	1	2	3	4	5
27. **Can be cold and aloof**	1	2	3	4	5
28. **Perseveres until the task is finished**	1	2	3	4	5
29. **Can be moody**	1	2	3	4	5
30. **Values artistic, aesthetic experiences**	1	2	3	4	5
31. **Is sometimes shy, inhibited**	1	2	3	4	5
32. **Is considerate and kind to almost everyone**	1	2	3	4	5
33. **Does things efficiently**	1	2	3	4	5
34. **Remains calm in tense situations**	1	2	3	4	5
35. **Prefers work that is routine**	1	2	3	4	5
36. **Is outgoing, sociable**	1	2	3	4	5
37. **Is sometimes rude to others**	1	2	3	4	5
38. **Makes plans and follows through with them**	1	2	3	4	5
39. **Gets nervous easily**	1	2	3	4	5
40. **Likes to reflect, play with ideas**	1	2	3	4	5
41. **Has few artistic interests**	1	2	3	4	5
42. **Likes to cooperate with others**	1	2	3	4	5
43. **Is easily distracted**	1	2	3	4	5
44. **Is sophisticated in art, music, or literature**	1	2	3	4	5

E. The last part consists out of a few demographic questions.

1. Are you…? *(check only one)*

☐ Male

☐ Female

2. What is your age? *(write response)*

……. year

3. How would you describe your residence or community when you were growing up? *(check only one)*

☐ 200.000 people or more

☐ 50.000 till 200.000 people

☐ 10.000 till 50.000 people

☐ 2.000 till 10.000 people

☐ less than 2.000 people

4. What education are you following at this moment? *(check only one)*

☐ Professional university

☐ Bachelor degree

☐ Master degree

☐ Something else: ……..

5. Under what area of study falls your current programme?

☐ Environmental sciences

☐ Social sciences

☐ Life sciences

Thanks a lot for your cooperation. Your contribution is highly appreciated!